SOFTWARE USER'S MANUAL

FOR THE

AIRBORNE BROADCAST INTELLIGENCE (ABI) SYSTEM

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<u>Change 1</u>

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SUMMARY PAGE FOR CHANGE 1

PAGE	CHANGE
Cover	Added "Change 1"
1-6	Para 2.1 - Added four new sentences after original sentence.
4-26	NOTE #2, First Sentence - Changed "receiver #1" to "receiver #3" and "Rx1" to "Rx3"
4-27	Added NOTE.
B-7	Step 2, Line 10 - Changed "**tar: /dev/rst12**" to "**tar xpf/dev/rst12**"
B-10 & 11	Building the Databases - Added new step 4 and renumbered remaining steps.
B-14	Step 6, NOTE, First Sentence - Changed "of" to "if". Second Sentence added "update".

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1.0 Scope

1.1 Identification

This Software User's Manual applies to the Airborne Broadcast Intelligence (ABI) System.

The ABI System is operational on Airborne Warning and Control System (AWACS) and Air Mobility Command (AMC) aircraft; however, there are differences in configuration and functionality. This document identifies these differences and separates the associated information into appropriate sections.

1.2 System Overview

The ABI System Architecture (Figure 1.2-1) integrates strategic and tactical intelligence to enhance real time threat awareness/avoidance. ABI serves a wide user base and supports flexible mission demands. ABI uses the Combat Intelligence System (CIS) Automatic Associator (AA) as its correlator and integrates the look and feel of the Multi Source Tactical System (MSTS) displays.

The ABI is a situation awareness capability designed to receive, process and display near real-time intelligence combined with target and shooter intelligence information from the Integrated Database (IDB) and operational information overlaid onto imagery and charts. The technology includes flight following, two and three-dimensional threat displays (AMC Only), terrain perspective views (AMC Only), and mission preview.

The system loads and stores aeronautical charts and multi-spectral and high-resolution imagery (AMC Only). Near real-time Signals Intelligence (SIGINT) and Radio Detection and Ranging Intelligence (RADINT) (AMC Only), is received in-flight and its symbology is overlaid onto stored images and charts, indicating parameters and lethality ranges in two and three dimensional representations. Off-line mission rehearsal fly-throughs (AMC Only), can be generated as well as interactive, operator-controlled fly-overs (AMC Only).
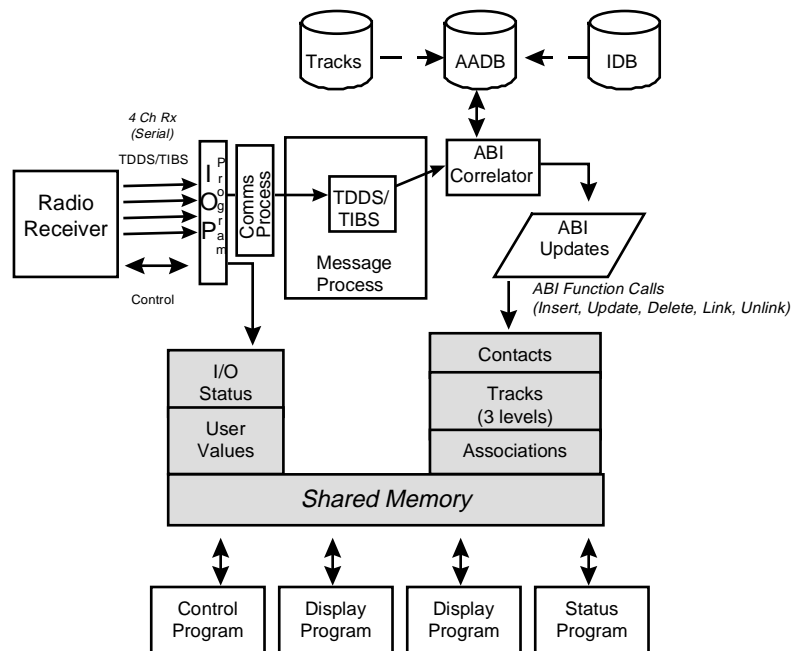
Figure 1.2-1 ABI Architecture

The ABI is composed of the following major components:

- Radio Frequency (RF) receipt and decryption

- Signals Intelligence correlation and display over charts and imagery

- Data Terminal and Display System

A brief description of each major component and its function is described below.

1.2.1 Receiver Group (AWACS)

The Multi-mission Advanced Tactical Terminal (MATT) Radio provides complete four channel receive capability in the military tactical Ultra High Frequency (UHF) Satellite Communications (SATCOM) frequency range (240-270 MHz). The radio performs frequency conversion and signal level normalization of 4 Radio Frequency (RF) signal inputs. Message signals capable of being received include Tactical Receive Equipment and Related Applications (TRAP) TRAP Data Dissemination System (TDDS), Tactical Information Broadcast System (TIBS), and Tactical Data Information Exchange System - Format B (TADIXS-B). The signals are fed to internal decryption devices with output from the radio in Tactical Digital Intercomputer Message Format (TDIMF).

1.2.2 Receiver Group (AMC)

To be provided at a later date.

1.3   Intelligence Data

The intelligence data stream from the radio receiver is captured, filtered, and correlated by ABI then displayed on the operator's monitor. Electronic Intelligence (ELINT) icons representative of the data processed by the ABI are overlaid onto National Imagery and Mapping Agency (NIMA) World Data Bank II, ARC Digitized Raster Graphics (ADRG) charts, Multi-Spectral Imagery (MSI) and SPOT imagery. The MSI and SPOT capabilities apply to AMC Only.

1.4   Imagery Software

The imagery software subsystem accomplishes the following functions:

- Displays digital aeronautical charts.

- Displays MSI and SPOT for selected world regions. (AMC Only)

- Displays ELINT and indicates threat envelopes over charts, imagery and terrain perspective views.

- Displays IDB Data.

- Displays mission route data with automatic updates of the Dead Reckoning location over charts, MSI and SPOT data bases. (MSI and SPOT-AMC Only)

1.5   System Hardware

1.5.1 Hardware Configuration (AWACS)

The ABI-AWACS system utilizes the MATT radio and the architecture is depicted in Figure 1.5-1.

RS-422

MATT
RADIO

ABI CPU

ABI FLAT
PANEL DISPLAY
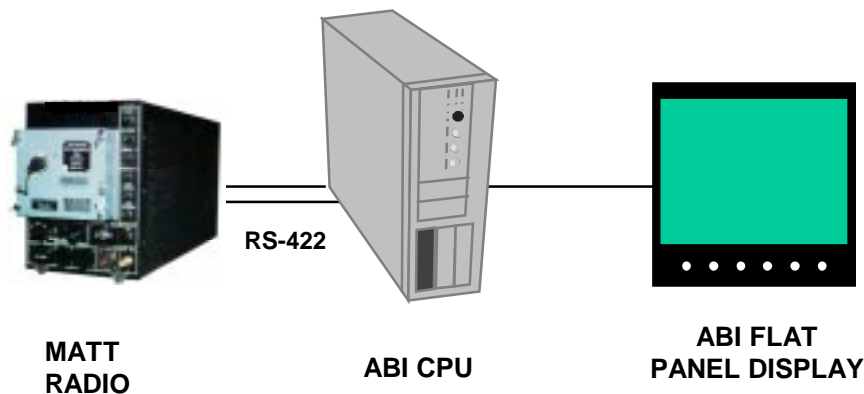
Figure 1.5-1 ABI-AWACS Architecture

1.5.2 Hardware Configuration (AMC)

To be provided at a later date.

1.5.3 Stand-Alone Codar Workstation (AWACS)

- Sun Ultra 2/300 MHz (Single Processor)

- Creator 3D Graphics

- 16 inch color flat panel display

- 512 MB RAM

- 2 x 9 GB removable drives

- Bootable CD-ROM

- 4mm DAT

- Floppy disk drive

- Keyboard with Track Ball

1.5.4 Stand-Alone Workstation (AMC)

To be provided at a later date.

1.5.5 Additional Hardware (AWACS)

- MATT radio

- Crypto key mats for appropriate inputs

- Crypto fill device CZY-10, KYK-13, or KOI-18

1.5.6 Additional Hardware (AMC)

To be provided at a later date.

1. 6 ABI Software

- CIS 1.2 / AA 5.0

- ABI Database (AA 5.0 Build 22.4 DB)/SYBASE IDB

- Solaris 2.5.1 (May 1996)

- ABI Display Software (Variant of MSTS)

- Modular UNIX code, C-language, OSF/Motif Interface Software:

1. 6.1 Imagery Software

- Multispectral and panchromatic imagery registration, manipulation and display (AMC Only)

- NIMA ADRG chart registration and display

- Overview and full-resolution displays

- 2D and 3D threat display over selected multi-spectral imagery (AMC Only), charts and country outlines

- Interactive, operator-controlled fly-over

- Terrain perspective views

- On-line mission rehearsal generation (AMC Only)

2.0   Radio Receiver Start-Up

2.1   MATT Start-Up (AWACS)

Table 2.1.1-1, Cryptographic Key Data Loading Procedures for the MATT Radio, provide a list of the startup actions, cryptographic keying information, and expected results for the MATT radio.   (text deleted).

2.1.1   Cryptographic Key Data Loading Procedures for MATT Radio (AWACS)

Table 2.1.1-1 Cryptographic Key Data Loading Procedures for MATT Radio

(table deleted)

2.2   Radio Receiver Start-Up (AMC)

To be provided at a later date.

2.2.1   Cryptographic Key Data Loading Procedures (AMC)

To be provided at a later date.

3.0 ABI System Operations

3.1 ABI Operational Overview

This section describes the operation of the ABI software program. The software is written in UNIX C with X-Windows and MOTIF graphics. The ABI program is structured to provide an Executive control function using the MOTIF window system utilizing pull-down menus.

The specific functional capabilities of ABI include:

- Displaying imagery - 2D and 3D perspective and interactive (AMC Only).
- Flight route creation.
- Generation of interactive and video presentations (rehearsal).
- Analyzing and previewing missions using imagery.
- Processing and analyzing images, electronic and other intelligence.
- Receiving ELINT data, Intellligence IDB, and superimposing onto 2D and 3D imagery and charts (AMC Only).

3.1.1 ABI Interface

The ABI user interface consists of a presentation screen for imagery, menus using push-button simulation, scrolling lists, and data entry forms with default values where appropriate. This allows the operator to conduct operations quickly and only allows access to functions which are compatible with an ongoing operation. Throughout the operation of ABI, prompts and error messages should be continually read.

Navigate through the ABI functions by "clicking on" screen buttons in the various menus, forms and windows. Selecting a button in ABI may activate an associate menu, a data entry form, or may automatically initiate a procedure.

3.1.1.1 Operating Menus with a Keyboard

To make a selection using the keyboard, note the underlined letter in the name of the desired pull-down menu. Press the "Alt" key and the key corresponding to the underlined letter of the name simultaneously. The submenu or data entry menu appears. The submenu selection can be made by pressing the keyboard key corresponding to the underlined letter of the sub-menu entry name. The "Alt" key should NOT be pressed when making a sub-menu selection.

3.1.1.2 Keyboard Input

Numerous forms in ABI require (or allow) data to be entered via keyboard input into entry fields. In these cases, alphanumeric text can be entered (if the field is empty) or it can be edited (if the field is already populated).

To enter alphanumeric text into an empty field:

- Position the cursor in the entry field and click the left button. An insertion cursor appears in the field.

- Using the keyboard, enter the alphanumeric text in the field. Whatever is entered appears to the left of the insertion cursor.

To edit alphanumeric text in a populated field:

- Position the cursor in the field at the position where editing is to occur and click the left button. An insertion cursor appears in the field.

- Using the keyboard, edit the alphanumeric text in the field. Anything entered appears to the left of the insertion cursor. Characters to the left of the insertion cursor can be deleted using the <BACKSPACE> key.

To clear a populated field and enter new alphanumeric text:

- Position the cursor in the field and double-click the left button. The contents of the field highlight in reverse video.

- Using the keyboard, enter the new text. At the first keystroke, the field's current contents clear, and the new text appears to the left of the insertion cursor.

3.1.1.3 Scrolling Lists

Numerous forms in ABI contain selection lists. Often, these lists are too long to display completely within their list windows. In these cases, vertical and/or horizontal scroll bars are used to fully view the list's contents. A list's contents can be scrolled using any of the following methods:

- To move the contents of the list by a single unit, click on the scroll bar's stepper arrows. Movement occurs in the direction of the stepper arrow clicked on (up, down, left or right).

- To move the contents of the list in a continuous scroll, click on the scroll bar's stepper arrows. Movement occurs in the direction of the stepper arrow pressed (up, down, left or right).

- To move the contents of the list one window length (minus one unit for overlap), click on the scroll bar's scroll region. The scroll region is the background of the scroll bar and visually

represents the length or width of the area that can be scrolled. Movement corresponds to the area of the scroll region clicked on.

- To continuously move the list of the window one window length (minus one unit for overlap), press on the scroll bar's scroll region. Movement corresponds to the area of the scroll region clicked on.

- To move the contents of the list to a location consistent with the scroll bar's slider location, drag the slider to that location within the scroll region.

3.1.1.4 Latitude and Longitude Input Formats

Many windows (throughout ABI) require the input of a latitude and longitude position. The standard format for all of these inputs is shown below in Figure 3.1.1.4-1, Latitude and Longitude Formats.
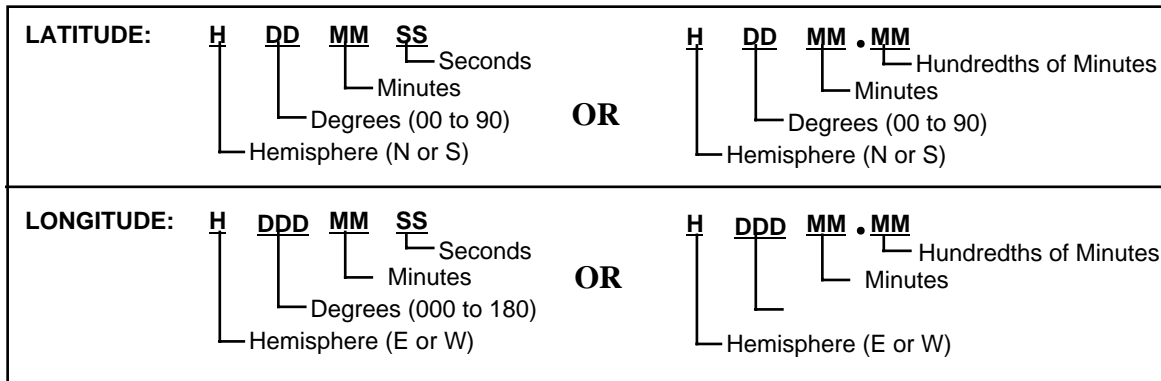
Figure 3.1.1.4-1 Latitude and Longitude Formats

3.2   Initial ABI Software Load Procedures

The initial software loading procedures for the Airborne Broadcast Intelligence System are included in Appendix B. These software loading procedures are intended for personnel with System Administration knowledge and understanding of UNIX commands as a super user. Initial ABI Software Load Procedures are normally completed prior to utilization of the ABI System by operators in the field.

3.3   ABI Power On Procedures

The following steps describe the initial Power On procedures for the ABI System.

Table 3.3-1 ABI Start-Up Procedures

Step	Operator Action	Expected Response
1.	Verify ABI CPU is "OFF"	Green "ON" light extinguished.
2.	Insert and manually lock two disk sleds into ABI CPU. **NOTE** Insert Disk 0 in Left Slot and Disk 1 in Right Slot	Disk sled manually locked in place.
3.	Set monitor power switches to "ON"	Green "ON" light illuminated
4.	Set ABI CPU "POWER" switch to "ON"	Green "ON" light illuminated and system automatically boots into the required operating mode (approximately 5 minutes). The screen display has CIS logo in background and the ABI Application Manager menu box in foreground.

3.4   ABI Database Transfer Procedures

The purpose of the ABI Database Transfer Procedures section is to describe the steps necessary to transfer data from a CIS/AA ground station and copy the files onto an ABI System. This procedure will also work from one ABI System to another. The procedures discussed in this section are intended for ABI field operators extracting and loading both Near-Real Time (NRT) as well as Integrated Database (IDB) information for airborne mission applications.

Section 3.4.1, NRT Data Transfer Procedures, covers the steps required to transfer NRT data from a ground CIS/AA system and load into the ABI System. Similarly Section 3.4.2, IDB Data Transfer Procedures, describes how to extract IDB data from a ground based CIS/AA system and subsequently load the files onto an ABI fielded system. The IDB transfer procedures describe steps to extract and load a "local" database IAW with Table 3.4-1.

See Appendix C, Allowable Databases, for additional database information.

<table>
<tr><th colspan="1">NOTE</th></tr>
</table>

NOTE
If both the NRT and IDB databases are to be extracted and loaded onto the ABI System it is extremely important to load the NRT first and the IDB second. This is necessary because the ABI System is rebooted after loading the NRT. If the system is rebooted after loading the IDB, it will permit the IDB to display outdated and incorrect data.

3.4.1   NRT Data Transfer Procedures

This section covers the steps required to transfer NRT data from a ground system and load onto the ABI System.

3.4.1.1   Extracting NRT Data from the Ground System

Table 3.4.1.1-1 describes the procedures for Extracting NRT Data from a CIS/AA ground station.

A 3.5 floppy disk in UNIX format containing the ABI load/extract scripts, and a writeable DAT tape are required. These are classified items that will be maintained IAW approved classified material handling procedures established by Government users.

Table 3.4.1.1-1 Extracting NRT Data from the Ground Station

Step	Action	Result
1.	Insert a tape into the DAT drive with write protect turned off (White tab visible at top edge of tape.)	Tape will load into drive and light on front panel will blink.
2.	Insert "ABI NRT Transfer Program" 3.5 floppy disk into drive.	
3.	Select the "Mount 3.5 UNIX Floppy" icon within the System_Functions folder.	A "3.5 Floppy Mount" window appears.
4.	Under the Application Manager, select System Functions/System Administration/UNIX Shell. Change directory to the floppy directory shown in the Floppy Mount Window. Type the following command at the UNIX command prompt: **cd /home/admin/floppy**	This will change the directory to the floppy disk directory.
5.	Type the following command at the UNIX command prompt: **./extract_nrt.sh**	This will start extracting NRT data and putting it on tape.
6.	When it has completed, close the UNIX window. Type the following command at the command prompt: **exit**	The blue UNIX shell window will go away.
7.	Manually eject the tape from the drive.	The tape will rewind and come out of the drive.

Step	Action	Result
8.	Activate the purple "3.5 Floppy Mount" window and press the **OK** button to unmount and eject the floppy diskette.	The floppy disk will be ejected from the disk drive. **CAUTION** Floppy disk may eject forcefully.
9.	Press the **OK** button in the white message window.	The message window will go away.

3.4.1.2 Loading NRT Data onto the ABI System

The following procedures describe the steps to load the NRT database obtained from the NRT Extract procedures (3.4.1.1), onto the database of an ABI System. Completion of the procedures for "Extracting NRT Data from the Ground Station" (Section 3.4.1.1) must be completed prior to loading the NRT data onto the ABI System.

A 3.5 floppy disk in UNIX format containing the ABI load/extract scripts, and a writeable DAT tape are required. These are classified items that will be maintained IAW approved classified material handling procedures established by Government users.

Table 3.4.1.2-1 Loading NRT Data onto the ABI System

Step	Action	Result
1.	Insert the NRT tape from the "NRT Extraction Procedures" into the tape drive of the ABI System and wait for the tape to get loaded. (There are no lights blinking)	The tape drive lights will blink while the tape is loading.
2.	Insert "ABI NRT Transfer Program" 3.5 floppy disk into drive.	
3.	Select the "Mount 3.5 UNIX Floppy" icon within the System_Functions folder.	A "3.5 Floppy Mount" window appears.
4.	Under the Application Manager, select System Functions/System Administration/UNIX Shell. Change directory to the floppy directory shown in the Floppy Mount Window. Type the following command at the UNIX command prompt: **cd /home/admin/floppy**	This will change the directory to the floppy disk directory.
5.	Type the following command at the UNIX command prompt: **./load_nrt.sh**	The NRT will be extracted from the tape.
6.	When it has completed, close the UNIX window. Type the following command at the command prompt: **exit**	The blue UNIX shell window will go away.
7.	Manually eject the tape from the drive.	The tape will rewind and come out of the drive.
8.	Activate the purple "3.5 Floppy Mount" window and press the **OK** button to unmount and eject the floppy diskette	The floppy disk will be ejected from the disk drive. **CAUTION** Floppy disk may eject forcefully.
9.	Press **OK** button on "Diskette Mount" window.	Window closes.
10.	Shutdown the system by selecting System Functions/Shutdown and then press on the red "Shutdown" button.	The system displays a messsage on a large pink banner, and then prints the same message on a red background. Test messages will then appear before the screen goes white and the 'OK' prompt is displayed.
11.	At the 'OK' prompt, type in the command: **boot**	The normal boot process will begin. After 5 minutes, the system will log into ABI.

3.4.2   IDB Data Transfer Procedures

3.4.2.1   Extracting IDB Data from the Ground System

The procedures in Table 3.4.2.1-1, Extracting IDB Data from the Ground Station, apply only to the ground CIS/AA system and describe the functionality of the extracting IDB from a ground system. A CIS system with a suitable IDB database loaded (either specific AOR or worldwide) is required, and a Data Manipulation / Message Analysis (DM/MA) Server of AA Stand-alone is recommended.

A 3.5 floppy disk in UNIX format containing the ABI load/extract scripts, and a writeable DAT tape are required. These are classified items that will be maintained IAW approved classified material handling procedures established by Government users.

Table 3.4.2.1-1 Extract IDB Procdures

Step	Action	Result
1.	Log in to the CIS system as admin, with the appropriate password for that user.	
2.	Under the Application Manager, select System Functions/System Administration/UNIX Shell	A window with a blue background and a UNIX command prompt will appear.
3.	Insert "ABI IDB Extract Transfer Program" 3.5 floppy disk into drive. Under the Application Manager, select System Functions/Mount 3.5 UNIX Floppy.	A window will appear on the screen indicating that the system is searching for the floppy drive to mount. This window will disappear, followed by a second window indicating that the floppy disk has been mounted, and will give a sub-directory name.
4.	Leave the "3.5 Floppy Mount" window displayed on the screen. In the UNIX shell, change to the sub-directory where the 3.5 floppy is mounted by typing the following command at the UNIX command prompt: **cd /home/admin/floppy**	Command completes successfully and UNIX prompt command returns.
5.	Type the following command at the UNIX command prompt: **./extract_abi.sh local**	Log output will appear in the UNIX shell window indicating that ABI data is being loaded to temporary tables and then bulk copied to data files. A small window will appear on the screen prompting for a DAT tape to be inserted.
6.	Ensure write protect is turned off (White tab visible at top edge of tape), then insert a tape into the DAT drive.	Tape will load into drive and light on front panel will blink.
7.	Wait for tape to initialize and light on front panel to stop blinking.	Tape will initialize and front panel light will stop blinking.

8.	Press **OK** button on window prompting for insertion of DAT tape.	Window will disappear and log output will appear in the UNIX shell window indicating that the bulk copied data files are being written to tape. A "Write ABI Data" window will appear indicating that the data has been extracted successfully. Tape will then eject.
9.	Press **OK** button on "Write ABI Data" window.	Window closes.
10.	Type the following command at the UNIX command prompt: **exit**	UNIX shell window will disappear.
11.	Press the **OK** button on the "3.5 Floppy Mount" window.	The 3.5 UNIX floppy disk will eject. **CAUTION** Floppy disk may eject forcefully**.**
12.	Press **OK** button on "Diskette Mount" window.	Window closes.

3.4.2.2 Loading IDB Data onto the ABI System

The procedures in Table 3.4.2.2-1 describe the functionality of loading the IDB database obtained from the "Extract IDB" Procedures (3.4.2.1) into the IDB database of an ABI System. Completion of the procedures for Extracting IDB Data from the ground station must be completed prior to loading the IDB data.

A 3.5 floppy disk in UNIX format containing the ABI load/extract scripts, and a writeable DAT tape are required. These are classified items that will be maintained IAW approved classified material handling procedures established by Government users.

NOTE
Do not reload extracted IDB data on the same host as the data was extracted from. Doing so will damage the system by overwriting the IDB database with just a subset of the original IDB data. This procedure must be run on a different host.

Table 3.4.2.2-1 Loading IDB Data onto the ABI System

Step	Action	Result
1.	Under the Application Manager, select System Functions/System Administration/UNIX Shell	A window with a blue background and a UNIX command prompt will appear
2.	Insert "ABI IDB Extract Transfer Program" 3.5 floppy disk into drive. Under the Application Manager, select System Functions/Mount 3.5 UNIX Floppy.	A window will appear on the screen indicating that the system is searching for the floppy drive to mount. This window will disappear, followed by a second window indicating that the floppy disk has been mounted, and will give a sub-directory name.
3.	Leave the "3.5 Floppy Mount" window displayed on the screen. In the UNIX shell, change to the sub-directory where the 3.5 floppy is mounted by typing the following command at the UNIX command prompt: **cd /home/admin/floppy**	Command completes successfully and UNIX command prompt returns.
4.	Type the following command at the UNIX command prompt: **./load_abi.sh local**	A small window will appear on the screen prompting for a DAT tape to be inserted.
5.	Ensure write protect is turned on (White tab NOT visible at top edge of tape) then insert the tape generated in "IDB Extraction Procedures" into the DAT drive.	Allow 1 minute for rewind time. Tape will load into drive and light on front panel will blink.
6.	Wait for tape to initialize and orange light on front panel to stop blinking.	Tape will initialize and front panel light will stop blinking.

Step	Action	Result
7.	Press **OK** button on "Load IDB Data" window.	Window will disappear and log output will appear in the UNIX shell window indicating that the bulk copied data files are being loaded. When completed, the "Load ABI Data" window will appear and indicate that the data has been loaded successfully. Tape will then eject.
8.	Press **OK** button on "Load ABI Data" window.	Window will disappear. Log output will appear in UNIX shell window indicating the data files are being sent to the SQL Server. UNIX command prompt will return when complete.
9.	Type the following command at the UNIX command prompt: **./init_abi_table.sh local**	Log output will appear in the UNIX shell window indicating that the ABI table is being created and initialized in the IDB database. The output may contain warnings (which may be safely ignored) that the ABI table, index, and trigger cannot be dropped because they do not yet exist.
10.	Type the following command at the UNIX command prompt: **exit**	UNIX shell window will disappear.
11.	Press the **OK** button on the "3.5 Floppy Mount" window.	The 3.5 UNIX floppy disk will eject. **CAUTION** Floppy disk may eject forcefully**.**
12.	Press **OK** button on "Diskette Mount" window.	Window closes.
13.	Double Click on Start_ABI Icon.	The new IDB will update / overwrite the old IDB on the ABI System.

4.0 ABI Software Operations

4.1   Initial Time Check Display

1.	Double-click the start_abi icon in the lower right portion of the screen.	The TIME CHECK screen will appear. (Figure 4.1-1.)
2.	Insure date/time are correct (Zulu time). The time must be +/- 2 minutes of Zulu, if not, make necessary changes (Figure 3.3-2) and select **OK.**	Once completed, the system is ready to use when a black background, country out-line map (named World Data Bank II) is displayed. For AWACS the MATT radio menu box will be overlaid on the map.

After selecting the *ABI* icon the program is initiated. When operating on the ABI System, the operator is first asked to verify the Zulu date and time (+/- 2 minutes) in the Time Check Window, Figure 4.1-1.

Figure 4.1-1 Time Check Window

NOTE
It is extremely important that the correct Zulu date and time be set on the server. ABI is a very time dependent program and if it is incorrect, the system does not function properly. Tracks and contacts are also purged based on ABI time. (All clients (AMC Only) receive their date and time from the ABI server).

The current date and time is presented. If the date and time are correct to within less than (text deleted) minutes, click "OK". If not, click "CHANGE" and then two text boxes containing the date and time are presented in Figure 4.1-2, Time Check Window (Changing the Date/Time). Edit these boxes to correct any errors then click "SET". When the corrected date and time are accepted, click "OK" to dismiss the window. If date and time are correct, click "OK" and the computer will accept its current settings. The computer then continues booting the ABI program. A Help screen is available for setting the correct date and time.

```
                          TIME CHECK

          Confirm the date/time or change if necessary.
            Date: 01/14/98          Zulu Time: 21:45:04
                  01/14/98                     21:43:16




  OK   Set  Help
```

Figure 4.1-2 Time Check Window (Changing the Date/Time)

4.2   Executive Banner

After clicking "OK" on the Time Check Window, an initial ABI display screen containing the Executive Banner and the Image Display Area (Figure 4.2-1) is presented. The initial ABI display also has the Radio Setup window (Figure 4.2-2) in view. The Radio Setup Window is presented when the ABI System is initially started to encourage the operator to program the radio first before taking any other action. The Radio Setup Window will be discussed in Section 4.8.1.1. The Image Display Area is also the initial client screen for client-server architectures (AMC Only).
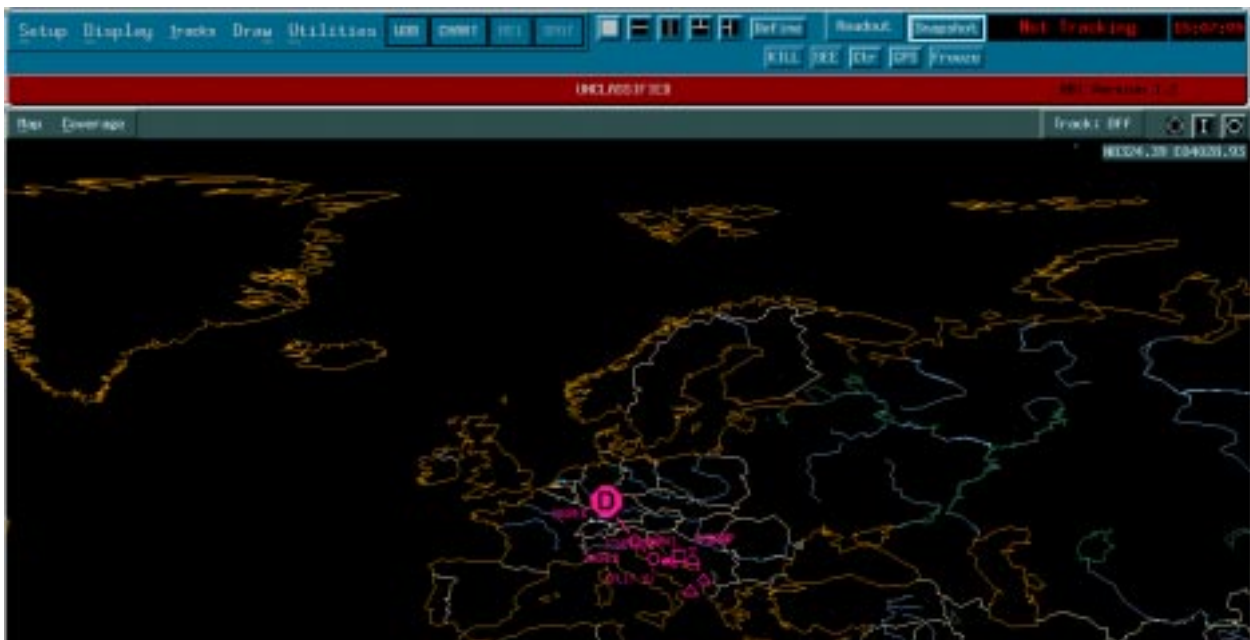
Figure 4.2-1 Initial ABI Display and Executive Banner

NOTE
ABI users must be cognizant of proper UNIX window utilization and the differences from a common PC desktop environment. There are no functions similar to PC capabilities for Cascading or Tiling windows. It is easy to be unaware of ABI windows hidden behind others.

NOTE
Throughout this document, all ABI names must be compatible with UNIX naming convention. ABI names cannot use spaces or any of the following symbols in the new file name: ! ~ ? / \ ( ) [ ] * " ` . In addition all ABI names must begin with an alphanumeric letter.
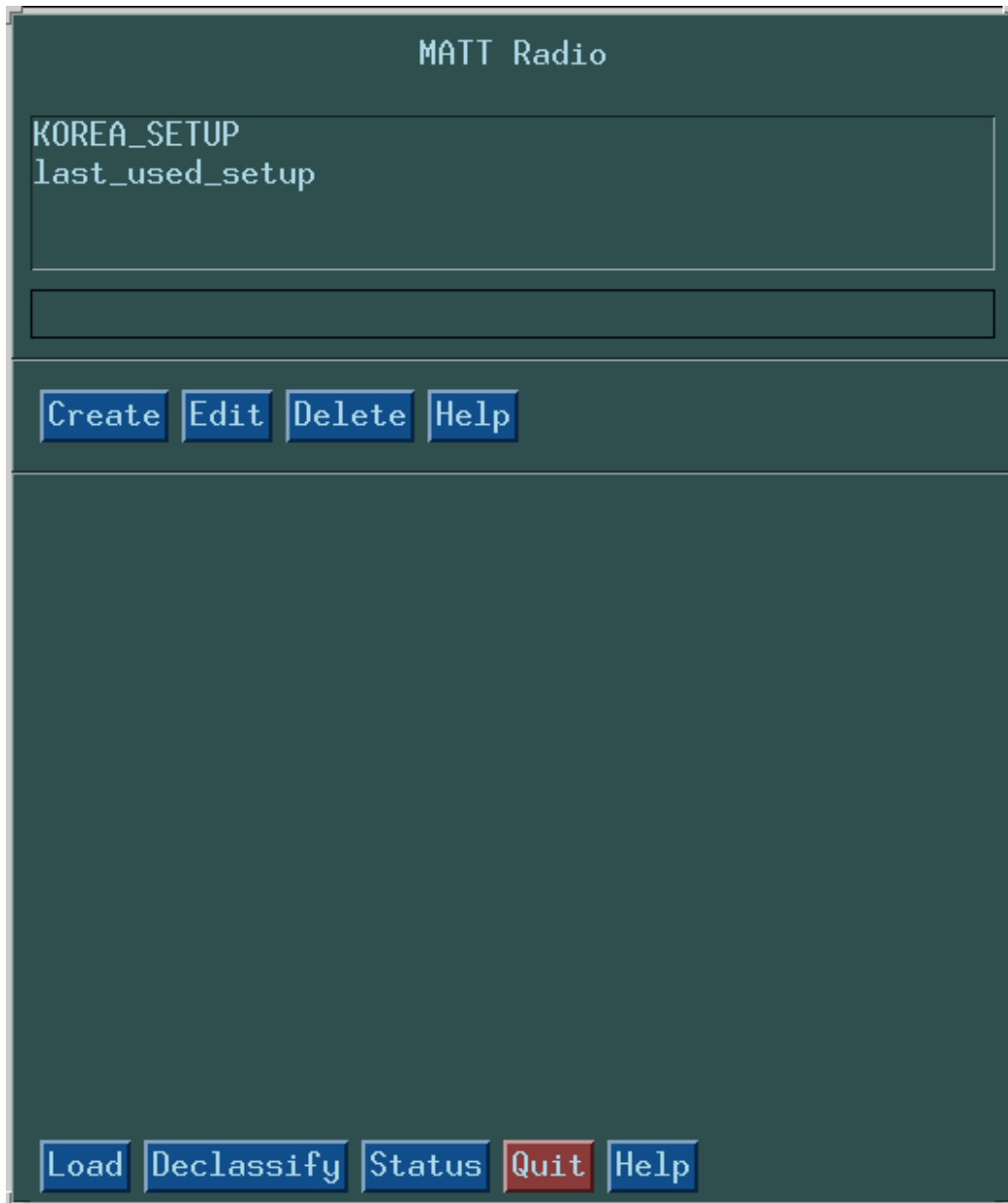
Figure 4.2-2 Radio Setup

4.2.1   Executive Banner Organization

The Executive Banner is comprised of four segments. The first segment (Functions) provides the operator functional capabilities and includes the five menu titles introduced below. These represent the primary setup, display, threats, and utility activities of ABI operations. The Functions Segment will be described last in this document in Sections 4.8.1 - 4.8.5, after other ABI capabilities are discussed.

The second segment of the Executive Banner (Charts) consists of the four types of imagery resources. The choices are represented in the Executive Banner by the symbols depicted below.

Segment three of the Executive Banner (Speed Buttons) consists of the "speed keys". The five choices below represent the five ways to partition the Image Display Area..

The last segment of the Executive Banner (Quick Features) includes the SNAPSHOT feature, navigational information, threat ring display buttons and a screen centering function.

The main area of the ABI screen is labeled the Image Display Area and is described in Section 4.3.

4.3   Image Display Area

When the ABI initial display is presented upon start up, the imagery displayed is World Data Bank II (WDB II). This display presents a quick macro view of the mission area.

4.3.1 WDB II Display

At the top of the WDB II display, Figure 4.3.1-1, is a banner that provides the controls and manipulation tools associated with WDB II. The WDB banner includes six action buttons related to the image display.

Figure 4.3.1-1 WDB II Display

4.3.2   <u>M</u>ap Button

MAP - Clicking this button displays the following list box:

```
┌─────────────────────────────────
│ ┌─────┐
│ │MAP │
│ └─────┘
│   ┌───────────────────────────────────────┐
│   │      Display World                     │
│   │  ■   National Borders                  │
│   │  ■   Internal Borders                  │
│   │  ■   Lakes                             │
│   │  ■   Rivers                            │
│   │      Set WDB Background                 │
│   │      Specify Compass Annotation         │
│   │                                        │
│   └───────────────────────────────────────┘
```
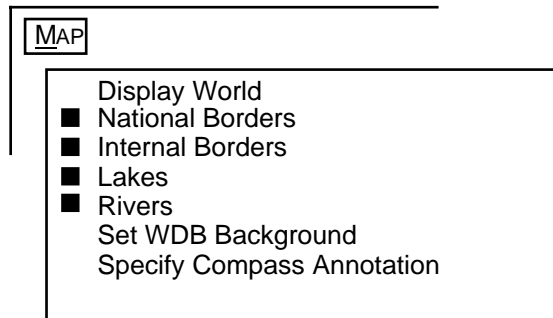
4.3.2.1   Display World Function

The DISPLAY WORLD function displays the entire world. Since the world is measured from 0-360 longitude and 0-180 latitude, WDB is displayed in a two-to-one projection. Therefore, to display the whole world, the window has to be twice as wide as it is tall. Selecting this function opens a special window to display the whole world. Also as a consequence of this two-to-one projection, circles appear as ovals.

 − The WDB II imagery includes items for national borders, internal borders (the state outlines), lakes and rivers. Each item defaults to being displayed but any or all of the listed features can be removed by clicking on each item.

 − SET WDB BACKGROUND allows the operator to select from different colors for the WDB background. Currently, gray, dark blue, violet, black, and other shades of similar color can be selected.

 − SPECIFY COMPASS ANNOTATION allows the operator to specify text to appear next to the center of the compass rose which is described below.

The MAP List box may be removed by clicking on a clear area in the map banner.

4.3.3   <u>C</u>overage Button

Clicking the Coverage Button displays the following list box:

```
┌──────────────┐
│ COVERAGE     │
│ ┌──────────┐ │
│ │ ☐ GNC    │ │
│ │ ☐ JNC    │ │
│ │ ☐ ONC    │ │
│ │ ☐ TPC    │ │
│ │ ☐ JOG    │ │
│ │ ☐ ATC    │ │
│ │ ☐ TLM    │ │
│ │ ☐ MSI    │ │
│ │ ☐ SPOT   │ │
│ │ ☐ DTED   │ │
│ │ ┌──────┐ │ │
│ │ │Close │ │ │
│ │ └──────┘ │ │
│ └──────────┘ │
└──────────────┘
```
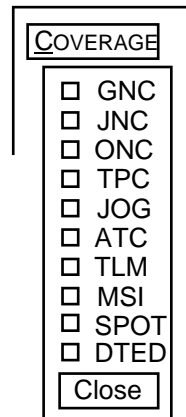
This box provides a method to filter what is displayed while in the SHOW COVERAGE mode (Section 4.8.2.1). By toggling each item on or off, its respective polygons are added or deleted to the SHOW COVERAGE display. The text color for each chart type matches the color of the rectangle drawn on WDB indicating the areas of coverage. DTED is shaded on WDB to indicate its area of coverage. To remove the COVERAGE box, click the CLOSE button.

NOTE
If all of the coverage categories are turned off, the toggle 'Show Coverage' function in the DISPLAY column of the Executive Banner will not be able to show any coverage rectangles.

4.3.4 Menu Bar Icons

– ⊕ - This icon represents a compass rose. Clicking on ⊕ creates a compass rose, oriented to true north, to appear on the image display area. The compass rose is centered on the display area and is removed by clicking on the icon a second time. This feature provides a quick, easy visual display to orient the operator to the direction of a subject of interest such as a threat or geographical feature.

– $\boxed{\text{I}}$ - This button provides a zoom-in feature.

– $\boxed{\text{O}}$ - This button provides a zoom-out feature.

4.3.4.1 Zoom Feature

This zoom feature operates on a graduated scale from one up to 2800. When the zoom feature is activated, the zoom scale is readout in the Map Banner. The WDB II world map in full display is considered zoom "1". The operator can zoom-in on this map and use the zoom-out to return to the full global view by

clicking the Zoom icons or depressing "I" or "O" on the keyboard. A TPC chart scale 1:500,000 equates to zoom 48; a JNC chart scale 1:2,000,000 equals zoom 12. The maximum zoom is 2048 which equals a screen scale of about 8 NM.

NOTE
The operator can also zoom-in and out by using the Shift Key and *"I"* or *"O"* buttons on the keyboard for ½ step zooms.

4.3.4.2 Track Feature

Clicking this button presents the operator with a list of all the active flight routes as well as a GPS button. Selecting any of the flight routes or the GPS determines what that window centers on. If GPS is selected, the window remains centered on the operator's GPS position. If a flight route is selected, the window remains centered on that flight route's DR position. Centering is disabled anytime the right button is clicked. GPS is an AMC Only function.

4.4 Executive Banner (Charts Segment)

The second segment of the Executive Banner consists of the four types of imagery resources. The choices are represented in the Executive Banner by the buttons depicted below.

WDB   World Data Bank (WDB) II System

CHART   Digitized navigation charts.

MSI   Multi-Spectral Imagery from LANDSAT.

SPOT   Panchromatic imagery from French SPOT system.

These buttons may appear grayed-out at times. Based on the point being tracked, if a button is grayed-out, this indicates that there is no data of that type available at that point.

Clicking on the symbol representing the operator's preference causes that type of imagery to be displayed.

4.4.1   World Data Bank Button

WDB II - When ABI is activated, by default, the initial display screen is the WDB II world map. WDB II imagery provides a global outline map that identifies land masses, rivers, lakes, national borders and internal boundaries as seen in Figure 4.4.1-1

Figure 4.4.1-1 WDB II Display

When the *WDB* button is clicked, the operator is presented with and must choose from a list of window sizes and positions. Below is a description of each choice.

There are seven window size/position choices. Each square above represents the image display area. The black shaded portion of each box represents where the image, in this case WDB II, will appear. The first box is the full screen selection. The next two are the top half of the screen and the bottom half of the screen respectively. The next two are upper left and upper right. The last two are left half and right half respectively.

4.4.1.1   Chart Imagery Button

ABI uses ADRG navigation charts available through NIMA on CD disks. The chart imagery button represents this imagery resource. These charts provide aeronautical information to manned aircraft. A limited amount of relief data including man-built areas is included.

   Note: ADRG is no longer supported by NIMA, and the new chart format will utilize CADRG.

WARNING
These charts are not up-to-date or "chummed" for man made obstacles and CANNOT be used for navigation.

When the chart button is clicked, the operator is presented with and must choose from four resolutions: Overview, Middle Resolution, Full Resolution, and 3-D. Once the resolution has been chosen, the window size/position must be selected as described above for WDB II.

4.4.1.2 Multi-Spectral Imagery Button (AMC Only)

Multi-Spectral Imagery (AMC Only) - LANDSAT Thematic Mapper ™ imagery is available in ABI. This imagery resource is available under the *MSI* button. ABI typically uses LANDSAT 4 and 5 imagery from BANDS 1, 2 and 3 (the visible TM Bands) which provide highly correlated, color imagery with $\pm$ 28.5 meter resolution. Digital Terrain Elevation Data (DTED) from NIMA is used to generate perspective images providing a three dimensional display.

The choices for window resolution, size, and screen position are the same as those for charts.

4.4.1.3 SPOT Button (AMC Only)

SPOT (AMC Only) - Imagery from the French Thematic Mapping system, i.e., SPOT, is also available in ABI. This imagery is similar to LANDSAT with the exception of color and resolution. SPOT imagery is black and white. Resolution is $\pm$ 10 meters. DTED is used to provide three dimensional displays. This imagery resource is available under the SPOT button.

The choices for window resolution, size, and screen position are the same as those for charts.

4.5 Executive Banner (Speed Buttons Segment)

The third segment of the Executive Banner consists of the "speed keys". The five choices below represent the five ways to partition the Image Display Area.

Clicking on the symbol causes the image display area to be appropriately partitioned. Clicking on any of the five buttons closes any open display windows thus cleaning up the screen and preventing duplication or build-up of unwanted windows.

4.5.1 Full Screen Display

When ABI is activated, by default, the initial display is a full screen, two dimensional WDB II configuration represented by the ☐ symbol. The symbol is highlighted as the selected choice. Any of the imagery resources stored in ABI may be displayed on ☐.

4.5.2 Horizontal Split-Screen Display

The horizontal split-screen display is one of two screen layout partitions that is ideally suited for viewing course oriented imagery. That is, this split-screen is useful on East-West routes. The horizontal split-screen is represented by the ⊟ symbol.

4.5.3   Vertical Split-Screen Display

The vertical split-screen display is ideal for North-South oriented courses. The vertical split-screen is represented by the ⊞ symbol.

4.5.4   Horizontal Tri-Screen Display

The horizontal tri-screen display enhances the operator's ability to get the most out of imagery. When using the horizontal tri-screen, the operator can view the overview and focus on a detailed view of an area or target. Additionally, the operator's understanding and perspective can be enhanced with a three dimensional view of the area of interest including target sites. The horizontal tri-screen is represented by the ⊟ symbol.

4.5.4   Vertical Tri-Screen Display

The vertical tri-screen display is useful in the same manner as the horizontal tri-screen but is more suited for North-South oriented routes. The vertical tri-screen display is represented by the ⊞ symbol.

4.5.5   Define Button

The *DEFINE* button is used to define what imagery will appear when any of the "speed keys" are clicked. Clicking the *DEFINE* button presents the Define Layout window, Figure 4.5.5-1.
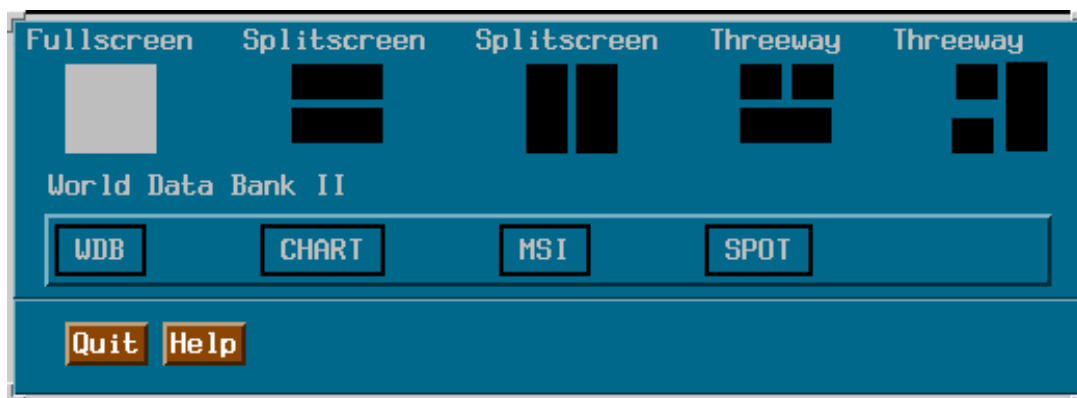
Figure 4.5.5-1 Define Layout

The Define Layout dialog box consists of four areas: the layout icons, the assignment readout line, the imagery assignment buttons and the function buttons.

- Layout Icons. These five icons are representative of the window layouts that are generated when the similar buttons are selected on the Executive Banner.

− Assignment Readout. A readout line is provided to verify the current assignment of an icon or to register an assignment when made. The readout displays what imagery is assigned when the layout is selected.

− Imagery Assignment Buttons. The Imagery Assignment buttons are used to define the contents of a window within a layout and mimic the buttons located in the Executive Banner for imagery generation.

− Function Buttons. The operator is provided two function buttons. The *QUIT* button removes the dialog box and saves any changes. The *HELP* button provides a step-by-step assistance with using the dialog box.

The operator must first place the cursor on the icon representing the layout of choice. When the layout has more than one screen segment, the operator may choose any screen segment as a starting point.

1. By clicking on the icon/screen segment, the window for that assignment is opened.

2. The imagery type currently assigned appears on the readout line.

3. Next move the cursor over the imagery assignment button of choice and click once.

4. Clicking on each imagery choice results in the display of an additional menu to further define the imagery assignments.

4.5.5.1   Imagery Assignment Submenus

The Imagery Assignment Submenus (Figure 4.5.5.1-1) depict the additional menus pulled down when clicking on the imagery assignment buttons.
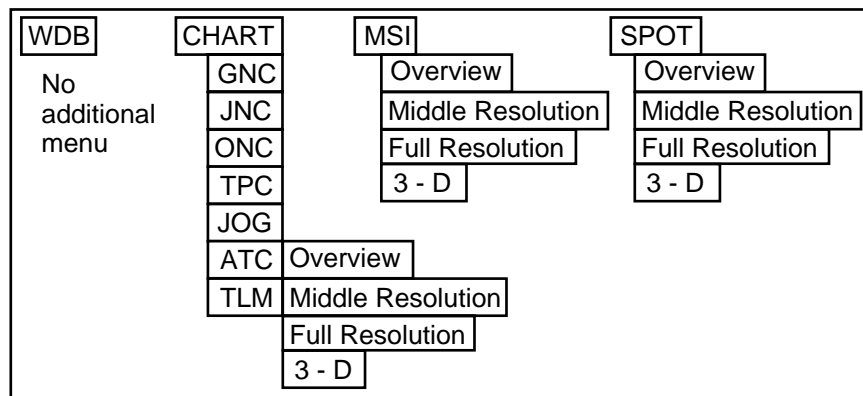
Figure 4.5.5.1-1 Imagery Assignment Submenus

- The imagery assignment is completed by clicking on a choice provided in the submenu options. This action removes the submenu and simultaneously, the readout line changes to reflect the new assignment for the subject icon/screen segment.

- When all assignment actions have been completed, click "CLOSE" to save the changes and remove the Define Layout window.

- Clicking the *HELP* button presents a help screen on defining screen layouts.

4.6   Executive Banner (Quick Feature Segment)

The fourth segment of the Executive Banner includes the SNAPSHOT feature, navigational information, threat ring display buttons and a screen centering function.

4.6.1   Readout Function

The READOUT function allows the operator to select a target whose position is to be displayed in the Lat/Lon field. This target may be a contact or a flight route.

4.6.2   Snapshot Function

The SNAPSHOT function takes a picture of the screen and saves it to a file for later printing and viewing. The process takes longer than a second so once the function is initiated, proceed with other tasks. SNAPSHOT files will be covered in more detail in Section 4.8.5.5.

4.6.5   Freeze Button

The *FREEZE* button provides the operator with an option to record a fix. When selected, the current position and time are printed next to the *FREEZE* button. Currently, there is no way to remove the data from the FREEZE area.

4.6.4   GPS Button

When the *GPS* button is pressed, the current ground speed, altitude, and heading of the contact or flight route being tracked are displayed in the Status window, Figure 4.6.4-1. Clicking the *minus* (-) button removes the box.
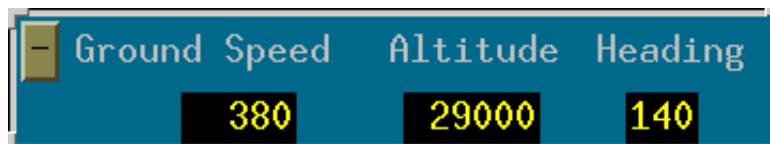
Figure 4.6.4-1 Status

NOTE
The time readout provides a continuous indication of Greenwich Mean Time (GMT).

A screen centering function, denoted by the button labeled CTR is used to select a point on which to center display windows (WDB, charts and MSI/SPOT). When active, clicking the right mouse button in any 2D window will center that window as well as all other 2D windows to that point. When the function is not enabled, clicking the right mouse button in a 2D window will center that window only.

4.7   Charts and Imagery

After opening charts views you will notice each chart window has a series of buttons that correspond to that particular window as shown in Figure 4.7-1, Chart Display Area.

Figure 4.7-1 Chart Display Area

For each chart window, there is a *QUIT* button which closes the window. There are also a series of buttons depicting the various families of charts available for display as well as a series of buttons for the three different zoom factors associated with the currently displayed chart.

The buttons reflecting the chart families only list those types available for display based on your current centering position.

There are three possible "zoom" scales available for each chart: Overview, Mid Resolution, and Full Resolution. If one particular zoom scale is not available for a chart, that button will not appear on the window.

There are two light bulb buttons, one with a - and one with a + icon in the center. These two buttons dim and brighten, respectively, the chart window. Only the chart itself is affected by these buttons, not the overlays on the chart. Therefore, if it is difficult to view threats, flight routes, or any other overlays on a chart, dimming the chart enhances the readability of these overlays.

Finally, there is a *TRACK* button on each chart window. This button centers the chart on the DR position of the selected flight route.

Each imagery (MSI or SPOT) window has a series of buttons that correspond to the "zoom" scales available for that image as shown in Figure 4.7-2, Imagery Display Area.

Figure 4.7-2 Imagery Display Area

There are also *QUIT* and *TRACK* buttons which perform the same functions as for a chart.

4.7.1   3D Display Area (AMC Only)

For any chart or image, if there is underlying DTED loaded into the ABI database, a 3 dimensional window can be generated as shown in Figure 4.7.1-1, 3D Display Area.
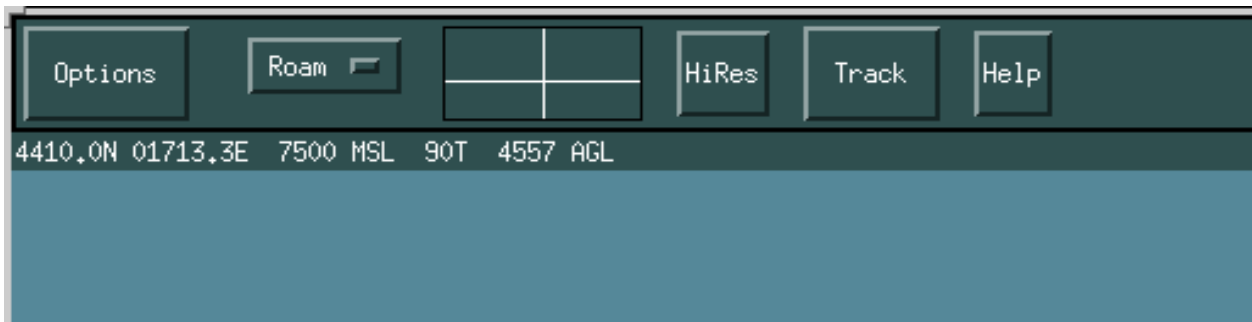
Figure 4.7.1-1 3D Display Area

The 3D window banner consists of five buttons/display areas. These buttons/data display areas are described in the following sections. The Mode function does not have a button. This feature is labeled ROAM, FLY, TRACK or LOOP in the 3D Window (Figure 4.7.1-1).

4.7.1.1   Display Area Options

The OPTIONS buttons allows the operator to recenter on a specific latitude/longitude, specify flight loop parameters, and setup the 3D display. When the *OPTIONS* button is selected, the Options Menu appears (Figure 4.7.1.1-1).

| Options | Track ▭ | ▭▭ | Track | Help |

Go To...
Specify Flight Loop... 3.34   10000 MSL 63T 8324 AGL
Setup...

Quit   3D DISPLAY AREA

Figure 4.7.1.1-1 Options Menu

4.7.1.1.1   **Go To**

The first selection under OPTIONS is GO TO. When selected, the Go To Menu appears as shown in Figure 4.7.1.1.1-1, Go to Menu.

Location N4409.99 E01713.30

Altitude 7500

Heading 233

Ok   Cancel   Help
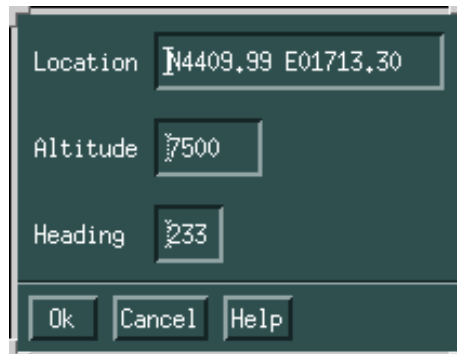
Figure 4.7.1.1.1-1 Go To Menu

The GO TO function allows the operator to specify where to center the 3D window. Simply enter the latitude/longitude, altitude MSL, and heading. If there is DTED and a chart or image available for that location, the 3D scene will be generated. An alternate method to entering the information is to draw a range-and-bearing line starting at the point from which it is desired to look from and drawn in the direction it is wished to look. Range-and-bearing is explained in Section 4.7.2.2. When finished, click "OK". To exit this function without recentering the display, click "CANCEL". Clicking "HELP" presents a help screen for the 3D window.

4.7.1.1.2   **Specify Flight Loop**

The next selection under OPTIONS is SPECIFY FLIGHT LOOP. When selected, the Specify Flight Loop Menu appears as shown in Figure 4.7.1.1.2-1.

Figure 4.7.1.1.2-1 Specify Flight Loop Menu

To specify a flight loop, enter the starting and ending waypoint numbers then click "OK". When in the LOOP mode, the ABI will generate a flight loop repeating the path between the starting and ending waypoints. When finished, click "OK". To exit this function without initiating the flight loop, click "CANCEL". Clicking "HELP" presents a help screen for specifying a flight loop.

4.7.1.1.3   Set-Up

The next selection is SETUP. When selected, the Setup Menu appears as shown in Figure 4.7.1.1.3-1.
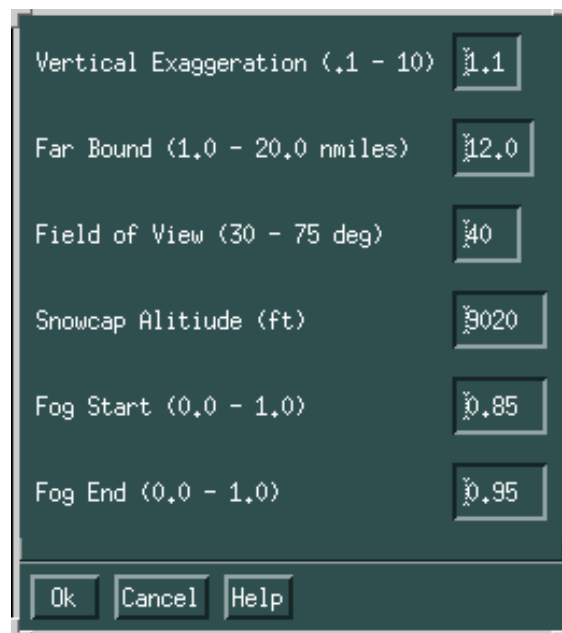
Figure 4.7.1.1.3-1 Setup Menu

− The VERTICAL EXAGGERATION field provides a means to increase the aspect ratio between different altitudes. This is useful for relatively flat terrain. It enhances what elevation there is making it easier to distinguish land features.

− The FAR BOUND determines how far ahead the operator can view the scene.

– The FIELD OF VIEW determines how broad an area is displayed in the window.

– The SNOWCAP ALTITUDE is used when viewing colored DTED only. Above the altitude specified, the terrain is drawn in white.

– The fog function adds fog to the window decreasing the visibility of the scene. FOG START specifies where the fog is to begin (0 being the front of the screen, 1 being the back). FOG END specifies where the fog is to end.

When completed, click "OK". To exit this function without changing any of the parameters, click "CANCEL". Clicking "HELP" presents a help screen for the 3D setup menu.

4.7.1.2 Modes

There are four modes to every 3D window: There is not an individual button for MODE functions; however there are buttons labeled ROAM, FLY, TRACK, and LOOP. in the 3D Window (Figure 4.7.1-1).

– The ROAM mode allows to rotate a 3D scene in various planes to achieve the desired look angle. The mouse/cursor motion combinations explained in Table 4.7.1.2-1 are used to manipulate the scene.

Table 4.7.1.2-1 Track Ball/Cursor Motion Combinations

Track Ball Button	Cursor Direction	Result
Left	To left	Scene rotates to left about your position
Left	To right	Scene rotates to right about your position
Left	Up	You move forward
Left	Down	You move backward
Center	To left	No action
Center	To right	No action
Center	Up	Depression angle decreases
Center	Down	Depression angle increases
Right	To left	You rotate about center of screen to the left
Right	To right	You rotate about center of screen to the right

Track Ball Button	Cursor Direction	Result
Right	Up	Your elevation decreases
Right	Down	Your elevation increases

− The FLY mode allows user to free flight through the scene. To fly, hold the left button down and move the cursor about the screen. Moving the cursor up causes the user to pitch down. Moving the cursor down causes you to pitch up. Moving the cursor to the left commands a left bank. Moving the cursor to the right commands a right bank.

− The TRACK mode tracks the current DR position of the selected flight route. Holding the left button down and moving the cursor to the left or right commands the scene to rotate to the left or right respectively. This is similar to the pilot turning his head to look out the window.

− The LOOP mode generates the movie loop if the operator has specified starting and ending points. There are two ways to specify these points. The first was described in Section 4.7.1.1.2 under SPECIFY FLIGHT LOOP. The second method is to edit the annotations for the starting and ending points. For the starting point, change the annotation to read STARTLOOP. For the end point, change the annotation to read ENDLOOP. The movie repeats itself when it reaches the ending point.

4.7.1.3 Look Angle

The box with the cross-hairs is designed to relate the field of view relative to the scene. The box itself represents the scene and the intersection of the cross-hairs represents where the view is relative to the scene as a whole. This box is only active when in the TRACK mode.

4.7.1.4 Track

The TRACK button presents a list of active flight routes. Selecting one will re-center the 3D window on the current icon location for that route.

4.7.1.5 Help

The *HELP* button presents a help screen with useful information about the 3D window.

4.7.1.6 Position Line

The POSITION LINE displays your current Lat/Lon, altitude MSL and AGL, and the true and magnetic headings. The Position Line is located under the five function buttons described above.

4.7.2   General Functions

4.7.2.1   Position Line

To recenter a 2D window, position the cursor to the new center point and click the right button. If the window is tracking the DR position of a flight route or a contact, clicking the right button disables the tracking function.

4.7.2.2   Cursor Location Readout

To assist operator orientation, the cursor latitude and longitude is displayed in the upper right hand corner of the any display. As the operator moves the cursor around the image, the location readout is continually updated.

−   Cursor - The cursor used by the ABI program is represented by several symbols depending on its screen location.

  −   On WDB, charts, and imagery, the cursor is represented by a plus (+) sign. Its map position is readout in the position line as discussed below.

  −   When the cursor is moved into the Executive Banner, the plus (+) sign changes to an arrow. Also, the cursor location readout ceases.

−   Cursor Shape - The cursor shape may be adjusted to accommodate operator preference by pressing CTRL then clicking the left button.

−   Cursor Pencil - When the cursor is located in the image display section, it can be used to draw geometric shapes. When used for this purpose, the cursor is represented by a pencil symbol with the lower right portion of the pencil being the cursor focus point. For the draw function see Section 4.8.4.

−   Bearing and Range Readout - ABI provides the operator with ability to determine bearing and range between two points. Bearing is in both degrees true and magnetic. Range is in nautical miles (NM). The function is accomplished by placing the cursor over the initial point, pressing the left button then dragging the cursor to the second point. Selecting the first point (the reference position) causes the latitude and longitude of that point to be displayed. Dragging the cursor to the second point causes the calculated bearing, range, and position to readout adjacent to the locational data of the first point. The bearing and range readout is removed by releasing the left button.

"Hands-Off" Bearing and Range Readout - ABI also provides the operator with the ability to measure range and bearing from one point to several points without having to continuously hold down the left button. To initiate this function, place the cursor over the initial point and double-click the left button. This "locks-in" that point. Now scroll the cursor to any point on the screen and the range and bearing to that point is continuously displayed. To terminate this function, click the left button.

4.8   Executive Banner (Functions Segment)

The first segment of the Executive Banner (Functions) includes the five menu titles introduced below which represent the primary functional activities of ABI operations.

- Setup - Used to establish communications controls, information filters, flight routes, areas of interest, user and weather preferences and satellite selection for orbit visualization.

- Display - Used to display charts or images available for manipulation during a mission, data filters, and system threat counts.

- Tracks - Used to provide control over the type and amount of track information presented on the image display.

- Draw - Used to draw bullseyes, flight routes, areas of interest and corridors.

- Utilities - Used to access general system options including importing imagery, registration of imported imagery, ground antenna positioning and expert functions.

4.8.1   Set-Up Menu

The Setup Menu is the first function to be addressed after the ABI initial display is presented. The purpose of the Setup Menu is to establish communications control, information filters and other basic mission activities such as establishing a flight route and defining Areas of Interest (AOIs).

The Setup Menu is accessed by clicking "SETUP" in the Executive Banner. The Setup Window (Figure 4.8.1-1) opens.
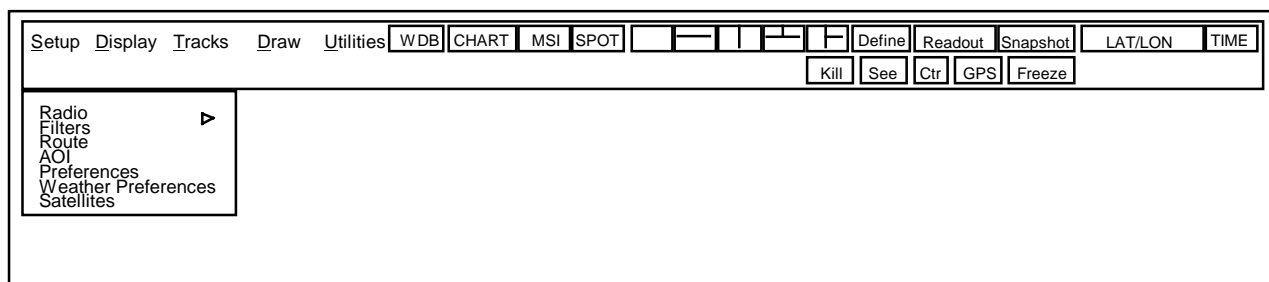
Figure 4.8.1-1 Setup Menu

4.8.1.1   Radio Setup Window

The first step under Setup is to ensure that radio communications are established and providing input.

When ABI is first started, the Radio Setup Window (Figure 4.8.1.1-1) is presented. This is done to encourage the operator to program the radio first before taking any further action.
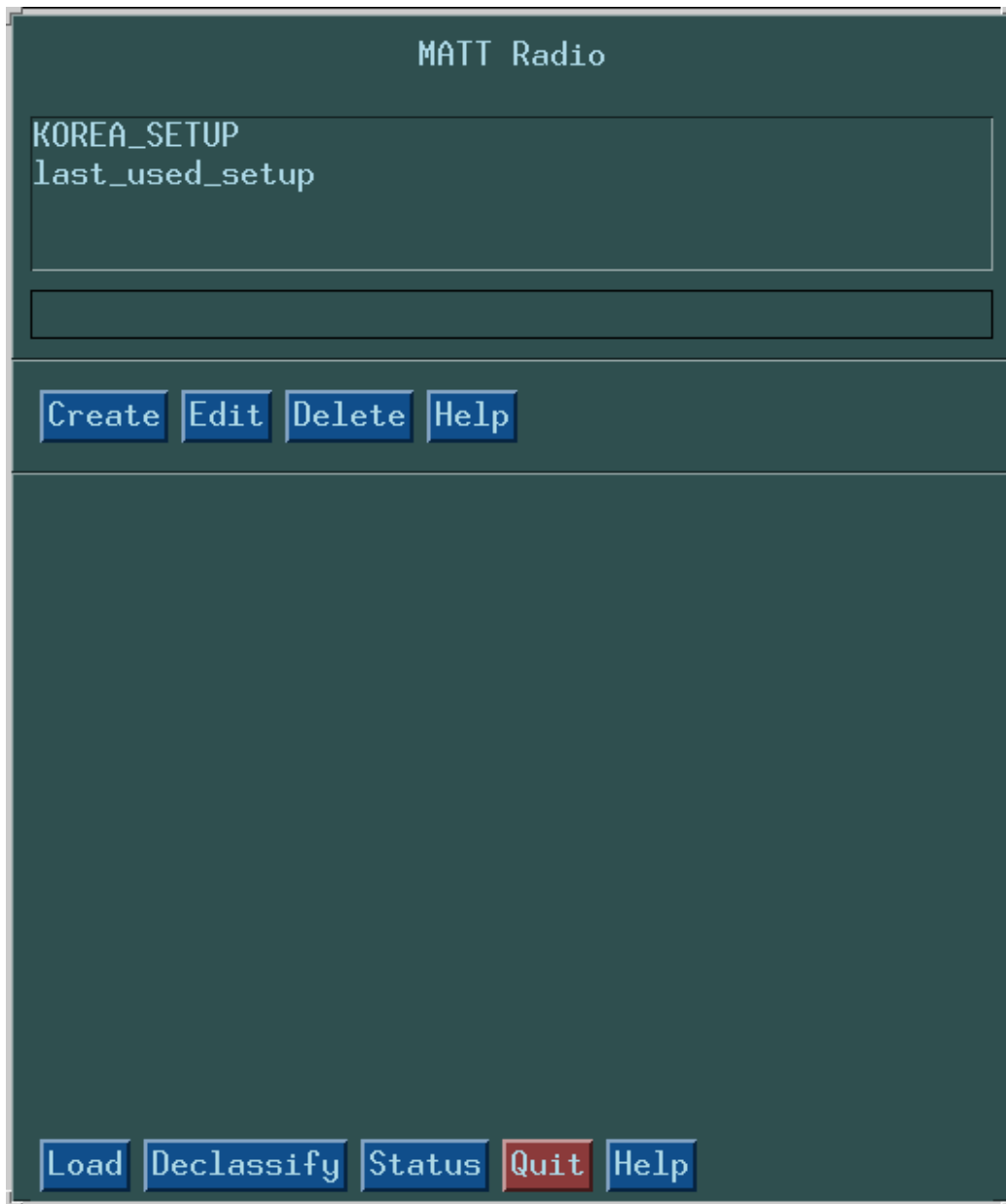
Figure 4.8.1.1-1 Radio Setup Window

The Radio Setup Window contains a list box area, four action buttons (Create, Edit, Delete, Help), a status area, and five additional buttons at the bottom. The five lower buttons include 3 MATT classification buttons, a Bypass Filter button (Not shown in figure), as well as *QUIT* and *HELP* buttons.

- The list box provides a means of displaying all the communication files currently stored in ABI.

  – The **last_used_setup** file shown in Figure 4.8.1.1-1 above, contains the last setup used from the previous mission.

  – The other named files represent setups related to a mission phase, unique operation or contingency.

  – Any of these setups can be modified or adjusted during mission operations.

- The four action buttons in the setup window are discussed below.

  – The *CREATE* and *EDIT* buttons provide the primary decision making options. These buttons are discussed in Section 4.8.1.1.1, MATT Radio Frequency Set-Up.

  – The *DELETE* and *HELP* buttons are administrative in nature.

    – *DELETE* is used to remove a selected radio setup from the disk permanently.

    – *HELP* presents a screen to explain the procedures associated with using the radio setup box.

- The three MATT classification buttons are *LOAD*, *DECLASSIFY*, and *STATUS*.

  – The *LOAD* button loads the software into the MATT radio. This software is necessary in order to process threat information. This procedure takes approximately 30 minutes and does <u>NOT</u> need to be done every time the radio is power cycled. This process should be done whenever the radio has been declassified or there seems to be a problem with the receipt of data.

  – The *DECLASSIFY* button removes the software from the MATT radio. This process takes approximately 5 minutes.

  – The *STATUS* button provides an interface to the radio to check various parameters of the radio to ensure it is functioning properly. When clicked, the MATT Radio Status Window is opened (Figure 4.8.1.1-2).

  – The *QUIT* button exits the program, removing the window without making any changes or programming the radio.

  – The *HELP* button presents a screen to explain the procedures associated with using the radio setup box.
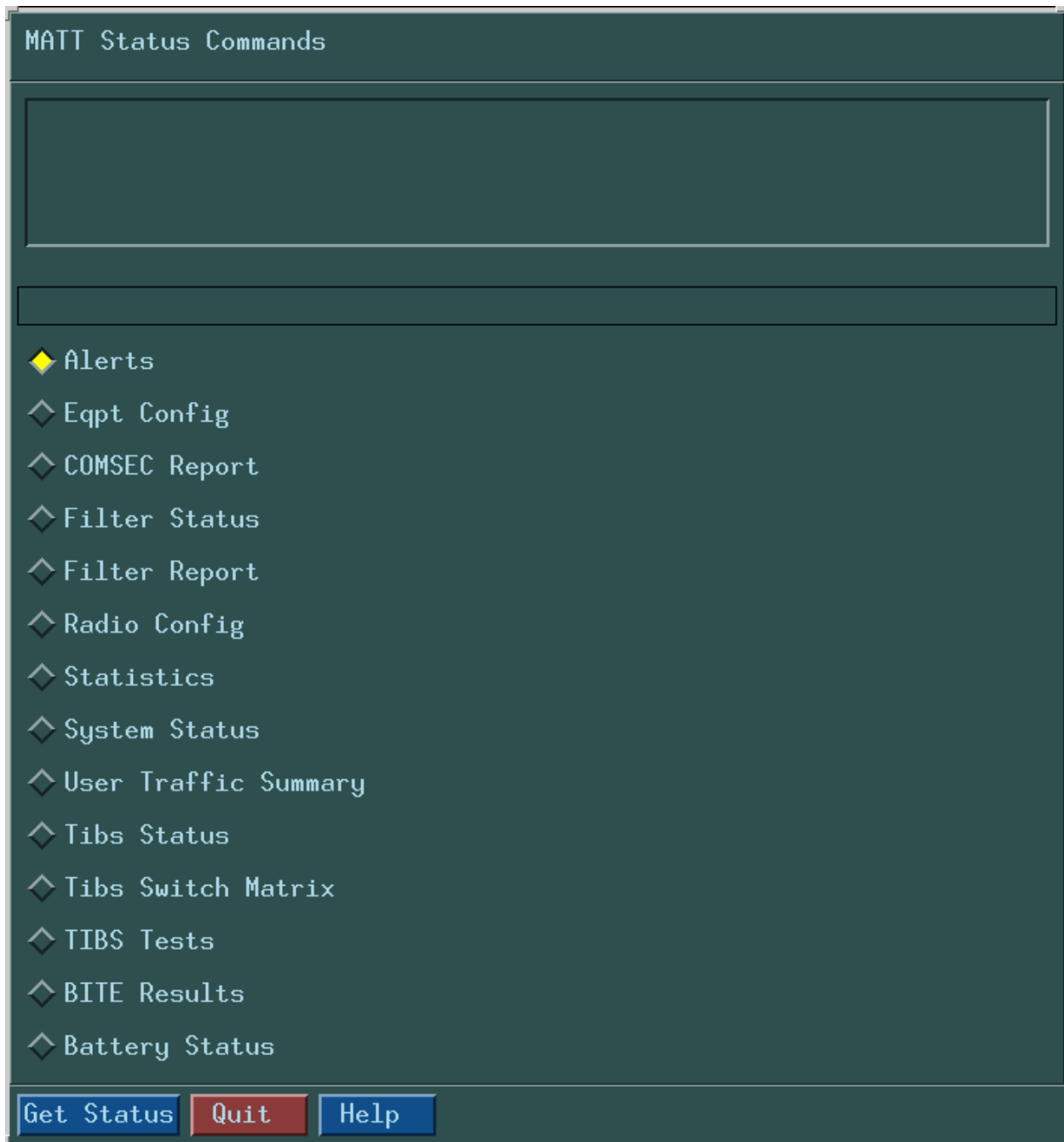
Figure 4.8.1.1-2 MATT Radio Status Window

The status area provides a region to display status messages received from the radio during programming by selecting Get Status.

The MATT Radio Status Window also includes *QUIT* and *HELP* buttons with standard functions.

4.8.1.1.1   MATT Radio Frequency Set-Up

The MATT Radio Frequency Set-Up (Figure 4.8.1.1.1-1) is located under the Set-Up / Radio / Create or Edit Menu

- To initiate a predefined setup, click a file in the configuration list then click "EDIT". The Radio Frequency Setup appears.

- Confirm the settings as required then click "ACTIVATE". This programs the MATT radio using the parameters from the selected file. The "ACTIVATE" button also automatically clears past MATT alerts.

Figure 4.8.1.1.1-1 Radio Frequency Setup

- Changes, Modifications and New Setups:

    - To initiate a change to an existing radio file, click the file name in the list box then click "EDIT".

    - Clicking "EDIT" brings up the communications parameters from the selected file and displays them in the Radio Frequency Setup (Figure 4.8.1.1.1-1) window. Using this button automatically

opens each data information box so the operator can change the data by positioning the cursor in the data box and entering the new data.

NOTE
A quick way to enter the EDIT mode is to double-click on the file name in the ABI RADIO SETUP window.

CLICKING "CREATE" BRINGS UP A BLANK RADIO FREQUENCY SETUP.
NOTE
As MATT receiver #3 has been pre-configured to be the TIBS, the only choice for Rx3 is "Off" or "TIBS". The other three receivers can receive TRAP, OBP, or TOPS but not TIBS. This configuration can be changed, but it requires a modification of the system configuration as well as special PC program.

- The operator has the means of creating an entirely new communications setup and file by following the procedures below.

  1. Select the desired receiver input from the list box shown.

```
OFF
TRAP
TIBS
OBP
TOPS
```

In the Radio Frequency Setup window:

1. Select a satellite or enter the desired frequency. Then enter the antenna value (1 or 2) and the filter number (1-4).

2. Select the desired inclusive geographic data filters. At least one must be chosen.

Up to 25 geographic filters can be defined and sent to the MATT radio. Long term problems can occur however, if more than 25 filter names are used from the last time that the MATT was declassified. The MATT remembers the name of every filter sent to it since the last declassification event, and it has only enough memory for 25 names. It is therefore suggested that a modest set of generic, area filters be defined with meaningful names such as KOREA, MIDEAST, AFRICA, NAMERICA etc., but the total number of filter names must be kept under 25 at all times. The content and definition of each filter may change, but the operator must manage the names.

Change 1

1. Select the desired data type, real, exercise or both.

2. Select the current TIBS key slot, 5 or 6.

3. Last, specify the rollover period for the TIBS key.

    a. The two rollover buttons specify the rollover time for the crypto keys being used. Rollover 1 specifies the rollover nature of the first key. Select from one of the three choices. If the rollover type selected is WEEKLY, the operator must select which day rollover is to occur. The type key selected for Rollover 1 automatically defaults as the choice for Rollover 2. Rollover 2 specifies the rollover period for the second key.

```
+----------+   +-------------+   +--------------------------------------+
|          |   | MONDAY      |   | NOTE: The Rollover day for Cryptographic |
| DAILY    |   | TUESDAY     |   | Key Data must be confirmed with the unit |
|          |   | WEDNESDAY   |   | COMSEC custodian.  The day may change.   |
| WEEKLY   |   | THURSDAY    |   +--------------------------------------+
|          |   | FRIDAY      |
| MONTHLY  |   | SATURDAY    |
|          |   | SUNDAY      |
+----------+   +-------------+
```

    b. Rollover for a daily key occurs at 2400Z. Rollover for a weekly key occurs at 2400Z of the day selected. Rollover for a monthly key occurs at 2400Z on the last day of the month.

*   The *SAVE AS* button on the Radio Frequency Setup window allows the operator to assign a name and have it appear in the list box.

*   When the changes are completed, click *ACTIVATE*. The file is stored automatically and the radio is activated.

*   The *HELP* button presents a help screen that guides the operator through the procedures for this window.

*   The *QUIT* button allows the operator to exit the Radio Frequency Setup without saving the setup or programming the radio.

4.8.1.2   Filters

The **Filters** function under SETUP is to ensure the desired information is received and displayed by ABI. Each of the communication setups broadcasts a vast amount of information. The **Filters** function allows the operator to establish filters that allow only that information concerning areas of interest to be processed and displayed on ABI.

Change 1

To initiate the **Filters** function, click "FILTERS" in the SETUP menu. The Filters associate menu is presented as shown in Figure 4.8.1.2-1.
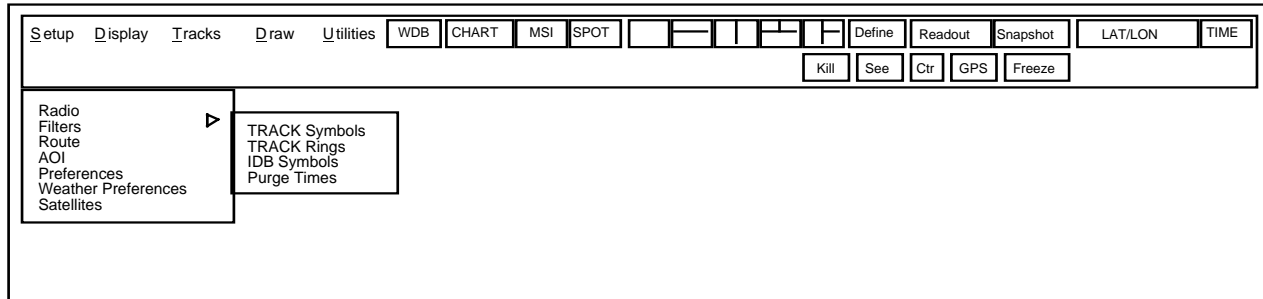
Figure 4.8.1.2-1 Filters

4.8.1.2.1   TRACK Symbols

When the operator clicks **Track Symbols**, one the three windows described in subsequent paragraphs opens based on the symbol set being used. The Symbol Filter Window (Figure 4.8.1.2.1-1) presents a display of symbols representing predetermined signals of interest for the mission and various display option action buttons. The symbol set can be changed in the Set-Up / Preferences Menu that is discussed in Section 4.8.1.5, Preferences. There are three choices of symbol sets - AWACS, MIL STD 2525, or MSTS (100-5).

Figure 4.8.1.2.1-1 Symbol Filter Window

The symbols are loosely based on Army symbology and the signals associated with each symbol are taken from the ELINT Parameters List (EPL) and other intelligence documents. The selected signals include Red Force, Blue Force, and Commercial emitters. Red Force symbols are colored red, Blue Force are colored blue, and Commercial symbols are white. (text deleted)

To view performance data for a particular symbol, click on the symbol and an information box appears listing the range and altitude as well as the ELNOTs associated with that symbol.

The MIL STD 2525 Symbol Filter Window (Figure 4.8.1.2.1-2) represents symbology based on MIL STD-2525. Red Force symbols are red, Blue Force are blue, Neutral symbols are green, and Unknown symbols are yellow.
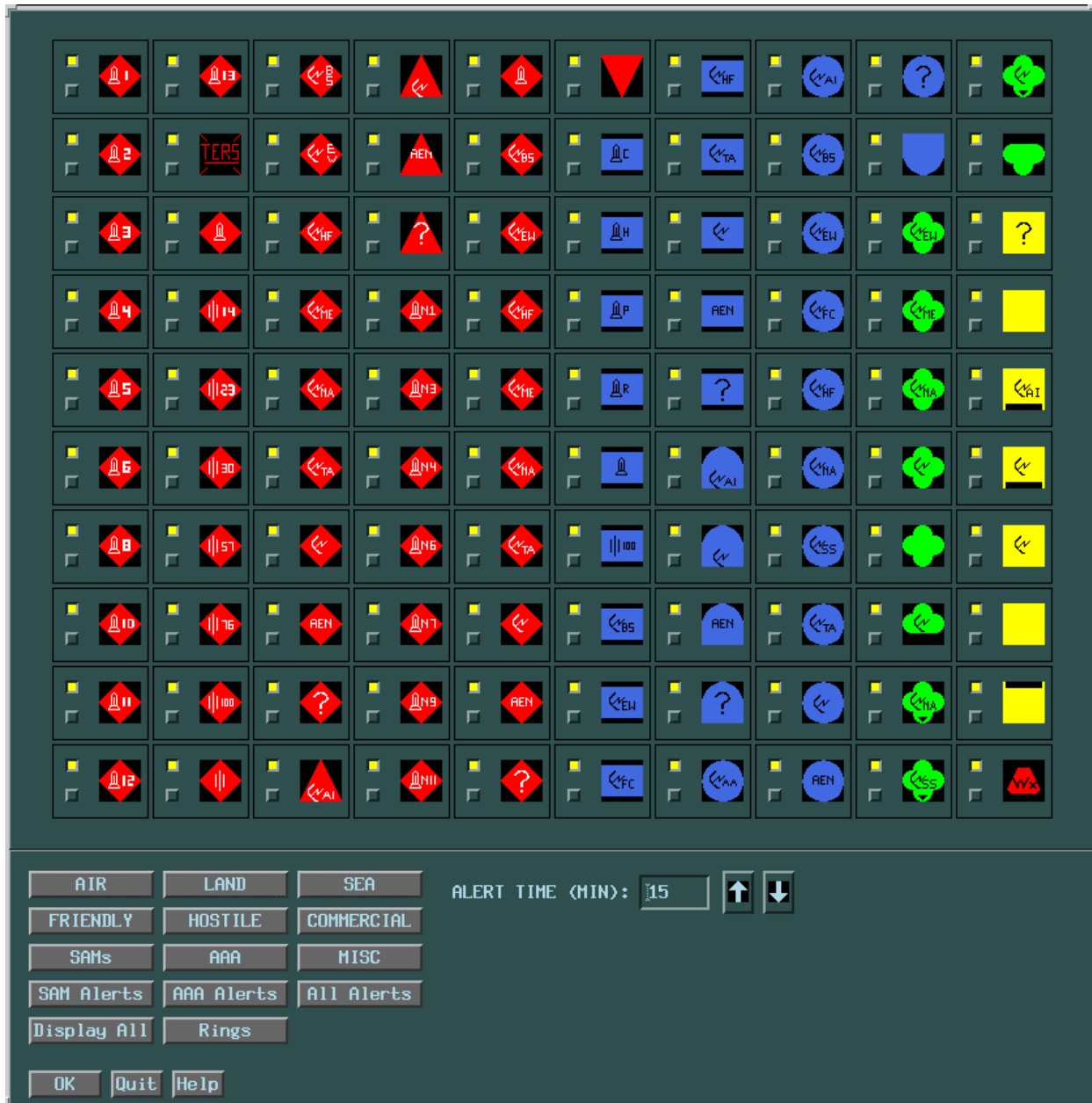
Figure 4.8.1.2.1-2 MIL STD 2525 Symbol Filter Window

The AWACS Symbol Filter Window (Figure 4.8.1.2.1-3) represents symbology based on the standard AWACS set. Red Force symbols are red, Blue Force symbols are green, and Neutral/Unknown symbols are yellow.

Figure 4.8.1.2.1-3 AWACS Symbol Filter Window

There are several display action buttons on each filter window that are self explanatory, for example *AIR, LAND, SEA, FRIENDLY, HOSTILE, COMMERCIAL, SAMs* and *AAA*. A mix of symbol choices may be made by clicking on the button located on the upper left side of each symbol to be displayed. When all choices are completed, click "OK" to activate the filters.

The box to the upper left of each symbol indicates whether or not that symbol is selected for display.

The box to the lower left of each symbol is the alert box. When selected, each new threat collected will flash a yellow box around that symbol. The box will flash for a user selected amount of time or until the

symbol is hooked with the cursor. To set the alert time, either type in the number of minutes or use the up and down arrows to increase or decrease the alert time.

• The *RINGS* button is explained in Section 4.8.1.2.2.

• The *OK* button activates the filters.

• The *QUIT* button is available to exit the symbol filter without changing the existing setup. Any choices made are ignored and the window is removed.

• The *HELP* button provides assistance when using this filter and explains the choices available.

  − Symbol Filter Default. By default, when ABI is activated, the system displays all symbols for all signals with all rings turned off. The last used setup is saved and recalled each time the box is brought up. Clicking "OK" activates the filters.

4.8.1.2.2   TRACK Rings

TRACK Rings opens a window containing the symbols that have threat rings associated with them. This window may also be opened by clicking the *RINGS* button in the TRACK Symbol window. When a lethal ELINT report is received by ABI, the display is presented with two detection circles around the emitter location.

The outer circle is called an "SEE" circle and represents the range at which the emitter site can detect an aircraft . The Inner Circle is called an "KILL" circle and represents the range at which the emitter site can shoot and hit an aircraft . The acquisition rings are yellow. The engagement rings are red. For each symbol, the operator is given the option as to whether or not the acquisition and engagement rings are displayed for each family of symbols (text deleted).

The button to the upper left of each symbol toggles the acquisition ring on/off. The button to the lower left of each symbol toggles the engagement ring. The operator can also select the altitude at which to display the rings. The rings displayed assume a featureless earth and maximum performance of the radar system. The ring menus for each symbol set are shown in Figures 4.8.1.2.2-1 through 4.8.1.2.2-3.

  − There are several display action buttons on each filter window that are self explanatory, for example *FRIENDLY SEE, FRIENDLY KILL*, HOSTILE SEE, HOSTILE KILL, SAM SEE, SAM KILL, AAA SEE, AAA KILL, ALL SEE and ALL KILL. A mix of symbol choices may be made by clicking on the button located on the upper left side of each symbol to be displayed. When all choices are completed, click "OK" to activate the filters. *QUIT* exits without making any change an *HELP* provides Track Ring assistance.

The box to the upper left of each symbol indicates whether or not that symbol is selected for display.

Figure 4.8.1.2.2-1 Threat Ring Menu
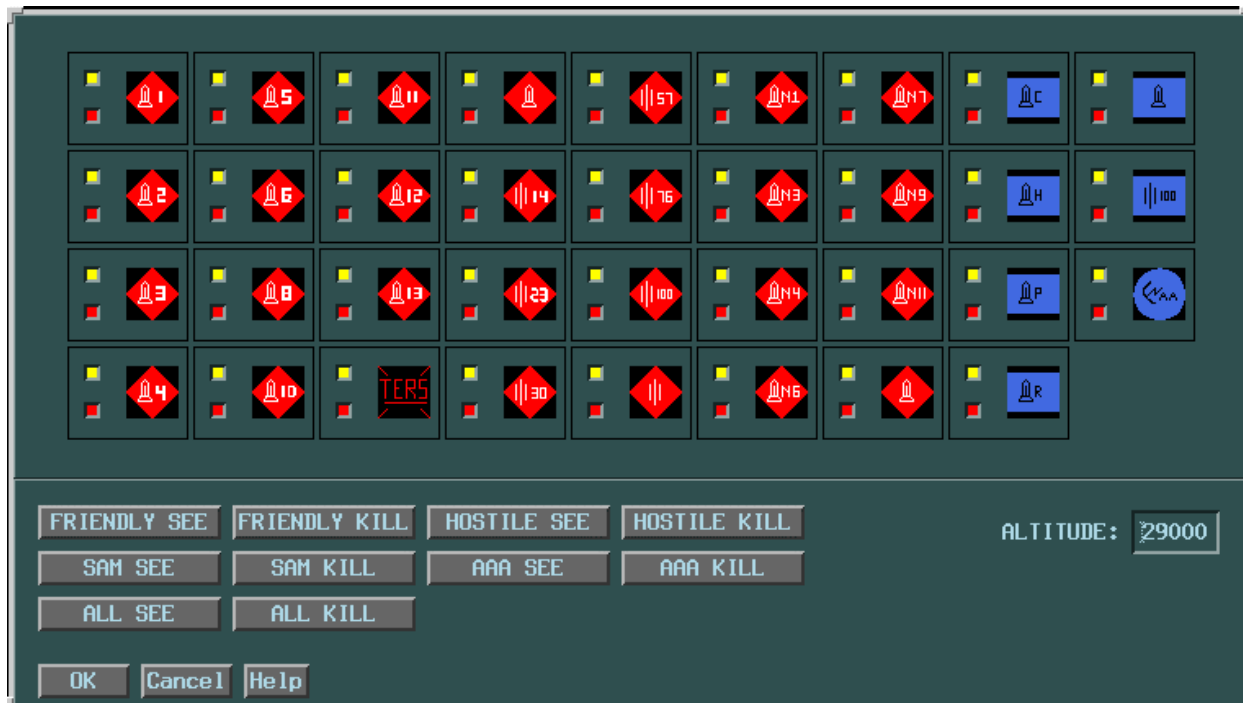
Figure 4.8.1.2.2-2 MIL STD 2525 Threat Ring Menu

Figure 4.8.1.2.2-3 AWACS Threat Ring Menu

4.8.1.2.3   IDB Symbols

IDB Symbols opens a window containing symbols used to display the IDB. These can be seen in figures 4.8.1.2.3-1 through 4.8.1.2.3-3. These symbols can be distinguished from the NRT data by the white box around the perimeter of the symbol.

Figure 4.8.1.2.3-1 IDB Symbols

Figure 4.8.1.2.3-2 MIL STD 2525 IDB Symbols

Figure 4.8.1.2.3-3 AWACS IDB Symbols

4.8.1.2.4   Purge Times

The second filter type is accessed by clicking "PURGE TIMES". The Purge Times Window (Figure 4.8.1.2.4-1) appears.

Figure 4.8.1.2.4-1 Purge Times

The Purge Times Window allows the operator to set the time at which each type of contact or track is purged from the data base. The timer begins after the last update is received. If another update is collected, the timer is reset.

- To accomplish this action:

    1. Click on the data field for the particular track or contact, then enter the purge time in hours and minutes.

    2. Once all the entries are complete, click "OK" to program these values.

        − *QUIT* exits without making any change.

        − *HELP* provides assistance with using this filter.

The purge times for land and sea tracks/contacts are checked every 10 minutes so a change in the purge time may not be immediately reflected on the screen. Purge times for air tracks/contacts are checked every 2 minutes.

4.8.1.3   Route

The ROUTE function under SETUP provides the operator with a method to enter and display their flight plan as well as the flight plans of other aircraft. This function provides the means to activate the track, modify an existing track or create a new track. To initiate this function, click "ROUTE" in the SETUP menu. When this action is completed, the Flight Route Setup Window (Figure 4.8.1.3-1) opens.

Figure 4.8.1.3-1 Flight Route Setup Window

The Flight Route Setup provides an easy means to select and activate pre-planned flight routes. The stored flight routes are listed by name. A flight route with an asterisk next to the name indicates that route is active. A flight route with a double asterisk next to the name indicates that route is active and it is the default flight route. The default flight route is intended to indicate your aircraft's route. There may be several routes with a single asterisk next to their name but there can be only one default flight route.

This Flight Route Setup window provides the operator the means of starting the flights at the time of mission initiation. A start date and time is listed for each route selected in the Flight Route Setup window (Figure 4.8.1.3-1). ABI defaults to the current date and time.

- To activate a Flight Route Startup:

    1.   Select the names of the routes to be displayed then click "ACTIVATE". The ACTIVATE button closes the Flight Route Setup Window and opens the Flight Route Activation Window (Figure 4.8.1.3-2).

    2.   If these entries are acceptable, simply click "OK".

    3.   If the entries are not acceptible, edit the Date Readout and Time Readout for each route as desired and click "OK". The activation time tells the ABI when to begin the dead reckoning calculations.
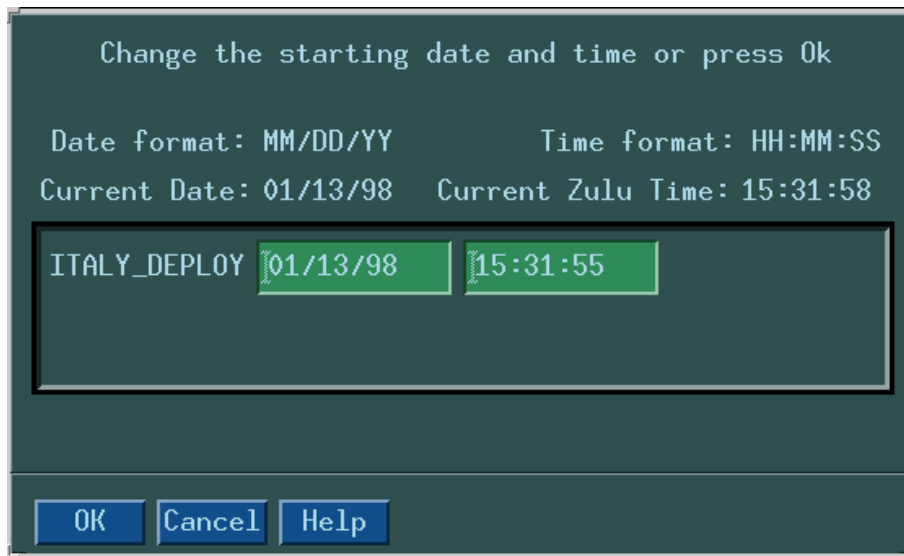
Figure 4.8.1.3-2 Flight Route Activation Window

- To deactivate flight routes and remove them from the 2D windows:

    1.   Select the route's name from the Flight Route Setup menu then click the *DEACTIVATE* button. The flight route is deactivated.

    2.   To change a preplanned route click the name of the route then click "EDIT". The *EDIT* button closes the Flight Route Setup Window and opens the Flight Route Entry Window (Figure 4.8.1.3-3).

Figure 4.8.1.3-3 Flight Route Entry Window

The *EDIT* button displays the existing data record for the selected route. Changes to entries can also be made.

NOTE
ABI provides a total of 40 lines for designated points. A scroll bar is provided on the right side to access the remaining points.

- To select the waypoint type:

    1. Click the desired symbol and the computer will automatically enter the two letter identifier in the next available space. Several administrative action buttons are provided to expedite completing the data record.

- The action buttons at the bottom of the Flight Route Entry window allow the operator to complete the EDIT function.

    –   INSERT BEFORE: ☐ and INSERT AFTER ☐ are available to make a new or revise an out of sequence line entry, and then place it correctly in sequence by simply putting the before or after line numbers in the open boxes.

    –   DELETE FROM: ☐ TO ☐ allows the operator to delete selected entries from the data base by entering the appropriate line number(s).

    –   RENUMBER is used to renumber the active line entries after changes have been made that caused lines to be erased or replaced. The waypoints are renumbered in sequence starting at one.

    –   REFRESH is used to re-list the line entries on the form, closing up gaps created by deletion and change.

    –   COLOR is used to specify the color of the flight route when drawn on WDB, charts and MSI/SPOT. Type the name of a color in the box or click the *COLOR* button. When the *COLOR* button is clicked, a 5x5 color matrix appears. Click the desired color and the name is filled in.

- The SAVE AS box allows the operator to name and save the route. When changes or modifications are made, the name is retained, unless the user specifies otherwise.

NOTE
It is extremely important that when the *SAVE AS* button is clicked, to confirm that the route was saved by checking the status line for the words "SAVE COMPLETE". If these words do not appear, there is an error somewhere in the flight route. This error needs to be corrected before ANY of the information is saved.

- The *ACTIVATE* button saves the route and generates the activation menu where the starting date and time are entered.

- The *QUIT* button allows the operator to close the Flight Route Entry Window without making any changes or revision to the existing data base.

- The *HELP* button provides a screen display providing instruction on the use of the Flight Route Entry Window.

- To create a new flight route:

    1.   Click CREATE from the Flight Route Setup Window (Figure 4.8.1.3-3).

    2.   This action presents a blank Flight Route Entry form. The actions discussed under Flight Route Change also apply to creating a new route.

- To edit a waypoint:

    1.   Click the middle button on any waypoint symbol in any 2D window.

    2.   The Waypoint Edit Window (Figure 4.8.1.3-4) appears.

Figure 4.8.1.3-4 Waypoint Edit Window

- To edit the waypoint:

    1.   Change the parameters as appropriate then click "MODIFY".

    2.   The waypoint reflects the change to the parameters.

- To delete the waypoint:

    1.   Click "DELETE".

    2.   The waypoint is deleted.

- To insert a waypoint:

    1.   click "INSERT BEFORE" or "INSERT AFTER". This creates a new waypoint with the parameters entered in the menu boxes.

    2.   If a mistake is made, clicking "UNDO" will undo the last change. The UNDO function only works to correct the last change. Any prior changes are permanent.

3.   The *ANNOTATIONS* button toggles on/off the annotations for that particular flight route.

- To graphically edit a waypoint:

  1. Place the cursor on the waypoint.

  2. Press the left button and drag the waypoint to its new location, then release the left button.

  3. The route file is automatically updated with the new waypoint location.

Active flight routes and waypoints are displayed in all windows. A route's current DR position is represented by a hexagon with a D in the center. The DR symbol can be advanced forward or backward along the flight route to compensate for variances in ground speed.

- To move the DR symbol forward:

  1. Place the cursor over the DR symbol then press the left button.

  2. The DR symbol continues to move forward until the left button is released or the end of the route is reached.

- To move the DR symbol backward:

  1. Place the cursor over the DR symbol and press the middle button.

  2. The DR symbol continues to move backward until the middle button is released or the beginning of the route is reached. In either direction, the DR moves at a slow pace for 3 seconds then changes to a faster pace for the remainder of the move.

4.8.1.4   Areas of Interest (AOIs)

The Area of Interest (AOI) function under SETUP provides the operator with a method of defining and displaying AOIs. To initiate this function, click "AOI" in the SETUP menu.

Selecting from any of the previously created AOIs listed in the center column causes that AOI's parameters to appear in the Area of Interest Window (Figure 4.8.1.4-1).

Figure 4.8.1.4-1 Area of Interest Window

The Area of Interest Window provides an easy means to display a pre-planned AOI, define a new AOI, or modify an existing AOI.

- To select and display an AOI:

    1.   Select an AOI for display by clicking on the AOI's name in the List box located in the center window. The center list box with scroll bar provides up to 50 entries. To show the AOI in all imagery windows, click "YES" under the readout 'Display Selected AOI?'

    2.   Once all changes to an AOI are completed, click "OK" to save the modifications. All currently displayed AOIs are listed in the Displayed AOIs area.

    3.   When changes to the AOIs are completed, click "QUIT" to close the Area of Interest Window.

- To modify an AOI:

  1. Click on the AOI name in the list box in the center window. This action causes the parameters of the selected AOI to appear in the left window showing the number of points and the latitude - longitude of each.

  NOTE

  The ABI provides entry lines to define an AOI consisting of twenty-one points maximum.

  ---

  2. When making a change, the coordinates of a point can be revised. Upon completion click "OK" to modify the data base.

- To create an AOI:

  1. Click "CLEAR" and a blank window opens.

  2. An Annotation box is provided for labeling the AOI. Any text entered in the Annotation box appears next to the AOI when displayed.

  3. AOI Color. A color to be used when the AOI is displayed must be entered. The name of a color may be entered in the box or the operator may click the *COLOR* button. Clicking the *COLOR* button opens a 5x5 matrix of colors. Click on the desired color and its name is automatically entered into the color box.

  4. Click AOI AS CORRIDOR to have a corridor drawn on either side of the centerline defined by the selected waypoints. Enter a value in the CORRIDOR WIDTH field to specify the size of the corridor.

  5. Type name of AOI in Name Window.

- To delete an AOI:

  1. Click on the name of the AOI to be deleted in the center list box and then click "DELETE AOI FROM DISK".

  2. To complete the action, click "OK".

The *HELP* button provides a screen with instructions on how to use this window.

4.8.1.5   Preferences

PREFERENCES allows the operator to configure certain aspects of the ABI such as line widths, track history lengths, coordinate system and symbol set. When selected, the Preferences Window (Figure 4.8.1.5-1) opens.

Figure 4.8.1.5-1 Preferences Window

The first line (**Line Widths**) in the Preferences menu sets the line widths for AOI, Threat Rings, Filters, Flight Routes, and Bullseyes. The line width is in pixels and ranges from 1, being the thinnest, to 9, being the thickest.

The **Log Interval** line determines how many track history positions are displayed when this feature is engaged. ABI stores up to the last 20 reported positions for any moving track.

The **GPS Track History** feature (when active) displays only the last 5, 10 or 20 positions depending on the setting.

The **Coordinate System** line determines the coordinate system to be used. The choices are Lat/Lon, UTM and MGRS.

The **Symbol Set** line determines the symbol set to be used. The selections are ABI, MIL STD 2525 and AWACS.

Small Symbols? determines the symbol size, large or small.

4-45

The **Threat Alert?** line enables/disables threat alerts using moving filters. When turned on, ABI will display a warning message when the aircraft's position enters within a defined range of the engagement ring of a displayed threat.

Assume Elevated Threats? the operator has set the preferences, click YES to apply them.

The **Days to Keep Log files** line asks the operator how many days to keep log files such as screen shots and whether or not to alert the operator that log files are going to be deleted.

Clicking the HELP button presents a help screen on the preferences box. Clicking QUIT removes the box without changing the preferences.

4.8.1.6 Weather Preferences

WEATHER PREFERENCES allows the operator to configure thresholds of the ABI Denied Area Weather (DAW) display such temperature, dew point, wind speed, ceiling, sky cover, altimeter, and age. When selected, the Weather Thresholds Window (Figure 4.8.1.6-1) opens.

Figure 4.8.1.6-1 Weather Thresholds Window

There are two slide bars for each of the characteristics. The first determines the green/yellow threshold. The second determines the yellow/red threshold. The value for each parameter is displayed above its

respective slide bar. Once the operator has set the thresholds, click the *OK* button. Clicking *HELP* presents a help screen on the weather preferences box. Clicking *QUIT* removes the box without changing any of the thresholds.

A sample DAW symbol is displayed in Figure 4.8.1.6-2.
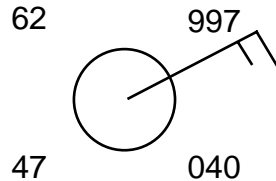
Figure 4.8.1.6-2 DAW Symbol

The number in the upper left corner is the temperature ($^{\circ}$F). The number in the lower left is the dew point ($^{\circ}$F). The number in the upper right is the altimeter. The number in the lower right is the ceiling in hundreds of feet. The circle represents sky cover. An empty circle is clear, a circle with an "X" through the middle is obscured, a circle with the top half filled in is scattered, a circle with the bottom half filled in is broken and a full circle is overcast. The line drawn from the center of the circle represents the wind direction. The barbs on the end of the line represent wind speed. A full barb is 10 knots, a half barb is 5 knots and a pennant is 50 knots.

4.8.1.7 Satellites

SATELLITES allow the operator to select satellites to be displayed using the orbit visualization tools in ABI. When selected, the Satellite Box (Figure 4.8.1.7-1) appears.
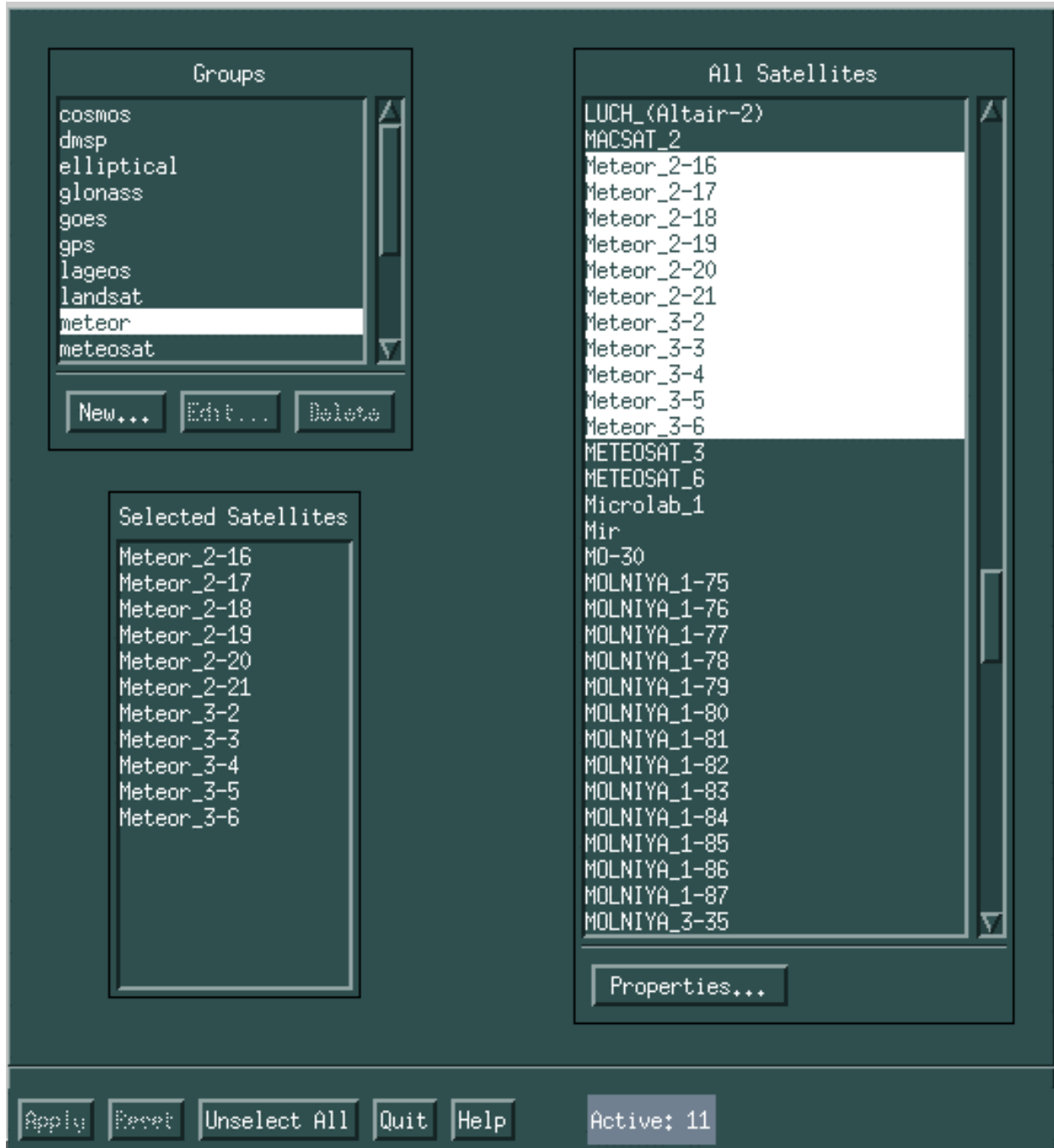
Figure 4.8.1.7-1 Satellite Box

The column on the right lists all available satellites. The column on the lower left lists the selected satellites. The box on the upper left lists the satellite groups. To create a new group of satellites, select the individual satellites from the column on the right. When completed, click the NEW button. The operator is prompted for a name for the group. Once entered, click "OK" and the group is created.

- To edit an existing group:

  1.   Select the group then click the *EDIT* button. The satellites in that group are displayed in a dialog box.

  2.   Add or delete satellites as desired then click "OK" when done.

- To delete a group:

  1.   Select the group name then click "DELETE".

  2.   The group is permanently deleted.

Clicking the *PROPERTIES* button opens the Satellite Properties Window (Figure 4.8.1.7-2) displaying the display properties of the selected satellites.
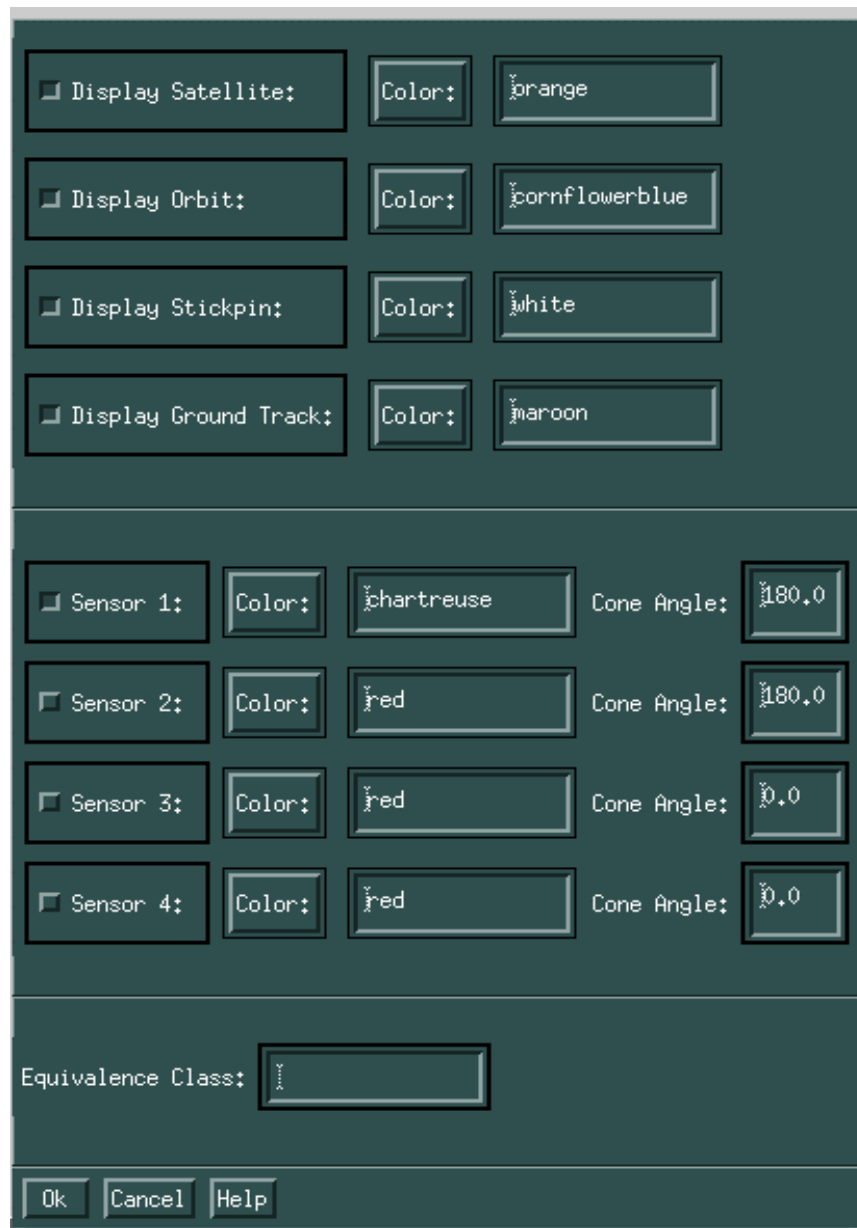
Figure 4.8.1.7-2 Satellite Properties Window

The Satellite Properties Window allows the operator to define the colors used to display a satellite or satellite group's name, orbit path, stick pin, ground track, and cones of coverage.

- To specify the color for any of a satellites properties:

    1.   Select the *COLOR* button next to the desired property. A color pallet with 25 colors appears.

    2.   Select the desired color or enter the name of a color.

- To specify the size of a sensor's coverage cone:

    1.   Enter the cone angle.

    2.   Entering a name in the EQUIVALENCE CLASS groups the satellites into a single entity and when the coverage window is displayed, instead of showing when a satellite is overhead, it displays how many satellites are overhead at a particular time.

    3.   Click "OK" to accept the settings.

    4.   Click "CANCEL" to remove the box without making any changes.

    5.   Click "HELP" to open a help screen pertaining to the satellite properties window.

    6.   Once the desired satellites are selected, click the *APPLY* button to begin using the new set of satellites.

    7.   Click on the *QUIT* button to remove the window.

    8.   Click on the *RESET* button to return the window setup to its previous settings.

    9.   Click "UNSELECT ALL" to unselect all the satellites.

    10. Click on the *HELP* button to open a help screen for the satellite box.

4.8.2   <u>D</u>isplay Menu

The Display Menu provides the operator with a review of the imagery available for use and a status of the information inputs driving ABI. Clicking the *DISPLAY* button in the Executive Banner, opens the Display Window (Figure 4.8.2-1).
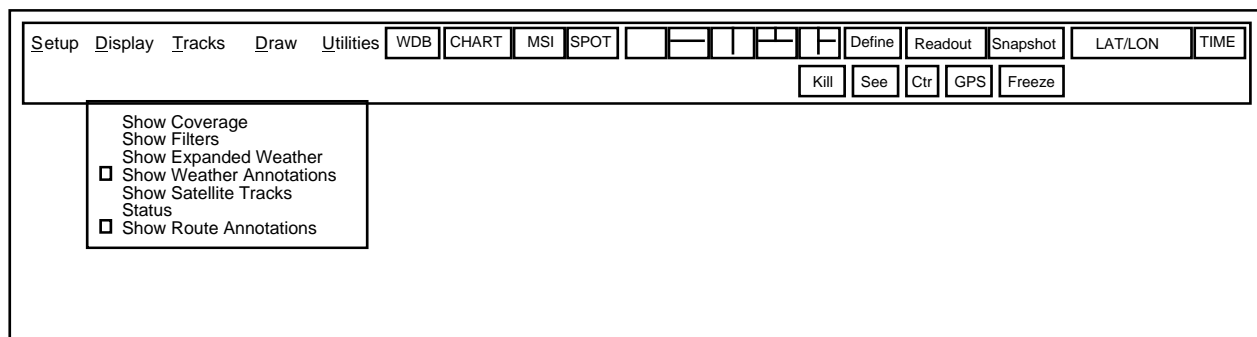
Figure 4.8.2-1 Display Window

4.8.2.1 Show Coverage

The *SHOW COVERAGE* button in the submenu provides the operator with a means of reviewing the charts and imagery available on ABI.

– To access the Show Coverage file:

  – Click the SHOW COVERAGE button. An outline of the charts and imagery available in ABI is displayed over the WDB II world map. Each chart and image type is drawn in a different color. DTED is displayed as a shaded area over the area of coverage.

  – Click on the COVERAGE button in the WDB window to find the color key. This provides the operator with a display of the types of imagery available in the database for the various legs of the route and the locations of interest.

NOTE
SHOW COVERAGE command only works if charts are enabled. Charts are enabled/disenabled by selecting specific map types in the SHOW COVERAGE menu.

4.8.2.2 Show Filters

When SHOW FILTERS is clicked, the data filters are displayed in all image windows (WDB, chart, and imagery). These shapes are geographic representations of both active and inactive filters. The active filters are drawn in red and the inactive filters are drawn in yellow. To remove the data filters, select SHOW FILTERS again.

4.8.2.3 Show Expanded Weather

This function converts all the standard weather symbols into the DAW symbols (See Section 4.8.1.6.)

4.8.2.4 Show Weather Annotations

This feature toggles the DAW symbol annotations on and off. When off, only the sky cover circle, wind speed and wind direction are displayed. When on, in addition to the previously mentioned parameters, the temperature, dew point, altimeter, and ceiling are displayed.

4.8.2.5 Show Satellite Tracks

This feature toggles the 2D display of satellite tracks on and off. When on, the satellite ground tracks selected in the Satellite box (Section 4.8.1.7) are displayed on WDB and charts. When displayed, the current position of the satellites can be tracked in real time.

4.8.2.6 Status

The ABI Status provides the operator with a quick review of the communication inputs to ABI. To access this file, click "STATUS". When this action is completed, the Status Window opens (Figure 4.8.2.6-1).

Figure 4.8.2.6-1 Status Window

As the figure indicates, Status displays the number of tracks provided by all input broadcasts. Contacts address single hits on a system. Tracks consist of multiple contacts or hits for a particular system. The number of hits per minute is also displayed.

The Status Window contains three ABI status action buttons which are described below.

– *MORE*: This button provides an expansion of the data provided on the status window. When the operator clicks the *MORE* button, the Status Window expands to the display illustrated by Figure 4.8.2.6.-2, Expanded Status Window. This display breaks out the track and contact reports into Air, Sea, Land and Unknown categories. Clicking LESS returns the display to its initial form.

– *QUIT*: This button closes the window.

– *HELP*: This button provides an explanation of the data displayed under the status windows.

Figure 4.8.2.6-2 Expanded Status Window

4.8.2.7 **Show Route Annotations**

This function toggles on/off the route annotations for all active flight routes.

4.8.3 **Tracks Menu**

- When an ELINT symbol is selected by clicking the left button on its symbol, the ABI presents threat data based on the latest ELINT contact report in the Executive Banner just above the boundary for the Image Display Area. When the operator has an interest in a particular site, clicking that site causes the latest threat report available to be presented.

  – When available, the ELINT readout includes the type of equipment, its parameters, the NATO name, the age of the track and the time of the last intercept.

- When an ELINT symbol is clicked on with the <u>middle</u> button, ABI presents more detailed information (Figure 4.8.3-1).

```
┌──────────────────────────────────────────────────────┐
│                    UNCLASSIFIED                        │
│ Elnot: B000Z  PRI 0.000  RF 0.000  091728Z7/Sep        │
│ Ellipse: 3812N4/12614E4  1NM  1NM  0.0T                │
│                                                        │
│                                                        │
│ ┌────────────┐┌─────────────┐┌──────────────┐┌─────────────┐ │
│ │Track Summary││ Show Ellipses││ Next in Track ││ Prev in Track│ │
│ └────────────┘└─────────────┘└──────────────┘└─────────────┘ │
│ ┌────────────┐┌─────────────┐┌──────────────┐┌─────────────┐ │
│ │Delete Track ││Delete Contact││  Next Track  ││  Prev Track │ │
│ └────────────┘└─────────────┘└──────────────┘└─────────────┘ │
│ ┌────┐┌────┐                                            │
│ │Quit││Help│                                            │
│ └────┘└────┘                                            │
└──────────────────────────────────────────────────────┘
```

Figure 4.8.3-1 Middle Button Click on a Threat

  – *"TRACK SUMMARY"* - Displays the track history.

  – *"SHOW ELLIPSES"* - Displays the uncertainty ellipses associated with the collector.

  – *"NEXT IN TRACK"* - Displays information for the next contact in the track.

  – *"PREV IN TRACK"* - Displays information for the previous contact in the track

  – *"DELETE TRACK"* - Deletes the threat track from the database.

  – *"DELETE CONTACT"* - Deletes the last contact from the threat track.

  – *"NEXT TRACK"* - Displays information for the next emitter.

  – *"PREV TRACK"* - Displays information for the previous emitter.

  – *"QUIT"* - Removes the dialog box from the screen.

− *"HELP"* - Presents a help screen for the threat information window.

• To access the Threats menu, click THREATS in the Executive Banner. This produces the THREATS submenu (Figure 4.8.3-2).
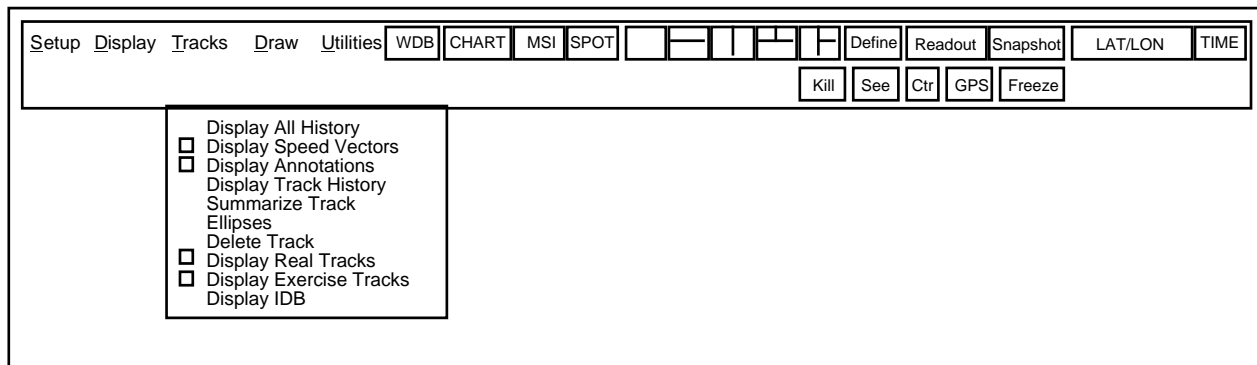
Figure 4.8.3-2 Threats Submenu

4.8.3.1   Default Threat Displays

DISPLAY SPEED VECTORS, DISPLAY ANNOTATIONS, DISPLAY REAL TRACKS and DISPLAY EXERCISE TRACKS, shown above with a button, denote the threat items displayed by default.

In addition, DISPLAY ALL HISTORY displays the track history for all threats and defaults to the off position. ABI stores the last 20 contact reports for each track but only displays the number set in the Preferences menu (Section 4.8.1.5).

4.8.3.2   Selectable Option Actions

The other THREAT menu items listed are option actions related to a displayed threat and/or track. The operator must first be working/observing the image display area and have a need for additional information associated with a displayed track or threat.

• To access these options:

1.   Click the symbol or track of interest.

2.   Click "TRACK" in the Executive Banner which displays the track submenu with the listed options. Each information option is discussed below. These options are also duplicated by clicking the middle button on a threat as explained at the start of this section.

− "DISPLAY TRACK HISTORY" causes the selected threat track history to be displayed (MAX 20 contact reports). The track has each reported position linked to the previous report location.

– "SUMMARIZE TRACK" causes ABI to list all individual reports associated with a designated contact or track location (Applies to TRAP only).

– "ELLIPSES" causes contact report ellipses to be displayed (Applies to TRAP only).

NOTE
Each contact location is determined by a correlation process that addresses a minimum of two to eighteen location reports per sensor look.

– "DELETE TRACK" purges the designated track from the screen.

– "DISPLAY IDB" toggles the IDB symbols on and off.

4.8.4   Draw Menu

- To access the *Draw* menu:

   1.   Click "DRAW" in the Executive Banner.

   2.   The *DRAW* submenu (Figure 4.8.4-1) is produced.
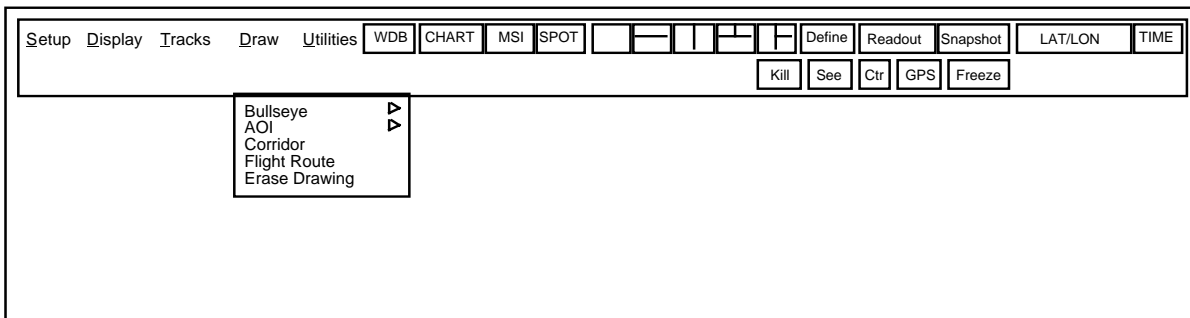
Figure 4.8.4-1 Draw Menu

4.8.4.1   Bullseye

When selected, the *BULLSEYE* menu option opens a submenu (Figure 4.8.4.1-1).
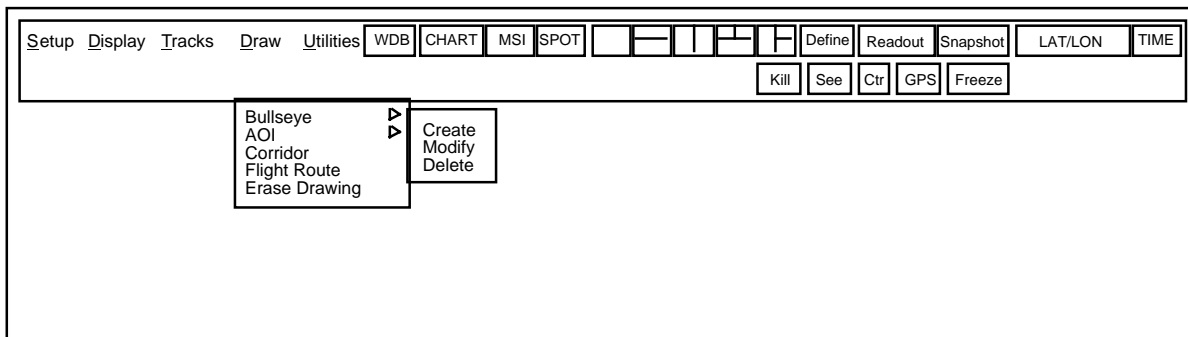
Figure 4.8.4.1-1 Draw Menu with Bullseye Submenu

- To create a bullseye:

    1.   From the *Draw* menu, select the *Bullseye* menu option. The *Bullseye* submenu opens.

    2.   Click on the *CREATE* menu option. A bullseye box (Figure 4.8.4.1-2) opens.

    3.   Enter the latitude and longitude for the center of the bullseye or click the left button somewhere in an image window then click GET POINT. The Lat/Lon will automatically be filled in. The Annotation is optional text that appears next to the bullseye's center. If the operator is tracking a contact and wants the bullseye to move with the contact, select DRAW @ SELECTED.

NOTE

The range rings are defaulted to 50, 100, and 150 NM. The operator can either accept these values or enter whatever size rings the operator prefers. If the operator only wants two rings, leave one of the boxes empty. If the operator only wants one ring, leave two boxes empty. The operator can also choose whether or not to display these rings.

---

    4.   When finished, click "OK" and the bullseye is displayed over all types of imagery. To remove the window, click the *QUIT* button. Clicking "HELP" presents a help screen for the bullseye window.

Figure 4.8.4.1-2 Bullseye Box

- To modify or delete a bullseye:

  1. Select the bullseye by clicking the left button with the cursor over the center of the bullseye.

  2. Select either *MODIFY* or *DELETE* menu option from the *Bullseye* menu. There can be up to 40 bullseyes defined and displayed.

4.8.4.2   AOI

When AOI is selected to be drawn, a submenu appears to select the shape of the AOI (Figure 4.8.4.2-1).
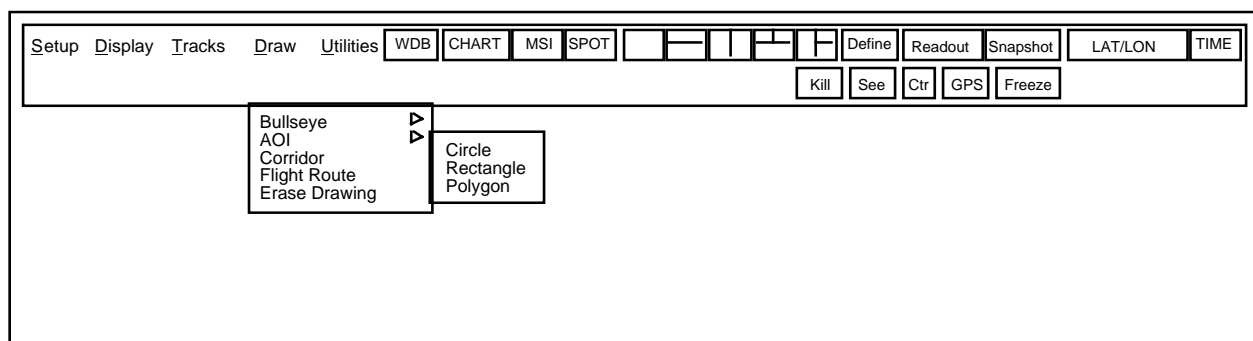
Figure 4.8.4.2-1 AOI

Once the shape has been selected, the operator is prompted to select a window in which to draw**.** Simply click in the desired window and the cursor changes to a pencil. The operator is confined to that window until drawing is complete. Also, when a window is selected, three drawing buttons appear at the top of that window. They are *ERASE LAST PT*, *STOP DRAW*, and *ERASE SHAPE*.

- To draw a circle:

1. Press and hold the left button down at the center of the circle and scroll the cursor out away from the center. An interactive circle will be drawn showing how big the circle is.

2. Consult the range and bearing display at the upper right hand corner of the drawing window to see the radius of the circle.

3. When the circle is large enough, release the left button.

- To draw a rectangle:

1. Click at the first of three corner points.

2. Click at the second of three corner points.

3. Click at the third corner point. The *AOI* menu appears with the points entered into the latitude and longitude fields.

4. Fill in the name and color then click "OK" and the AOI is complete.

- To draw a polygon:

1. Click at each desired point until completed (up to 21 points).

2. Click "STOP DRAW". The *AOI* menu appears with the points entered into the latitude and longitude fields.

3. Fill in the name and color then click "OK" and the AOI is complete. The polygon AOI drawing function can also be used to draw boundaries, routes or other unbounded lines.

4.8.4.3   Corridor

When CORRIDOR is selected, the operator is prompted to select a window in which to draw. Simply click the desired window and the cursor changes to a pencil. The operator is confined to that window until drawing is complete. Also, when a window is selected, three drawing buttons appear at the top of that window. They are *ERASE LAST PT, STOP DRAW,* and *ERASE SHAPE.*

- To draw a corridor:

1. Click the left button at each waypoint.

2. When completed (up to 21 points), click "STOP DRAW". The *AOI* menu appears with the points entered into the latitude and longitude fields.

3. Fill in the name and color of the AOI then click AOI AS CORRIDOR and enter the corridor width.

4. Click "OK" and the AOI is complete.

4.8.4.4 Flight Route

When FLIGHT ROUTE is selected, the operator is prompted to select a window in which to draw. Simply click in the desired window and the cursor changes to a pencil. The operator is confined to that window until drawing is complete. Also, when a window is selected, three drawing buttons appear at the top of that window. They are *ERASE LAST PT, STOP DRAW,* and *ERASE SHAPE.*

- To draw the flight route:

    1. Click the left button at each waypoint.

    2. When completed (up to 40 points), click "STOP DRAW". The Flight Route menu appears with the waypoint fields filled in. A default altitude of 10,000 ft and a default ground speed of 300 is used to ease in completing the menu.

    3. Select the waypoint types, enter a name, then click "SAVE AS" and the route is done.

4.8.4.8 Erase Drawing

If a shape is drawn but later the operator wants to cancel the procedure, clicking "ERASE DRAWING" will remove whatever shape is on the screen and terminate the drawing process. This can also be done by clicking "ERASE SHAPE" in the drawing window.

4.8.5 <u>Utilities Menu</u>

The UTILITIES function provides the operator the tools that facilitate the general operation of ABI.

    1. To access the *Utilities* menu, click "UTILITIES" in the Executive Banner.

    2. The *Utilities* menu (Figure 4.8.5-1) appears.
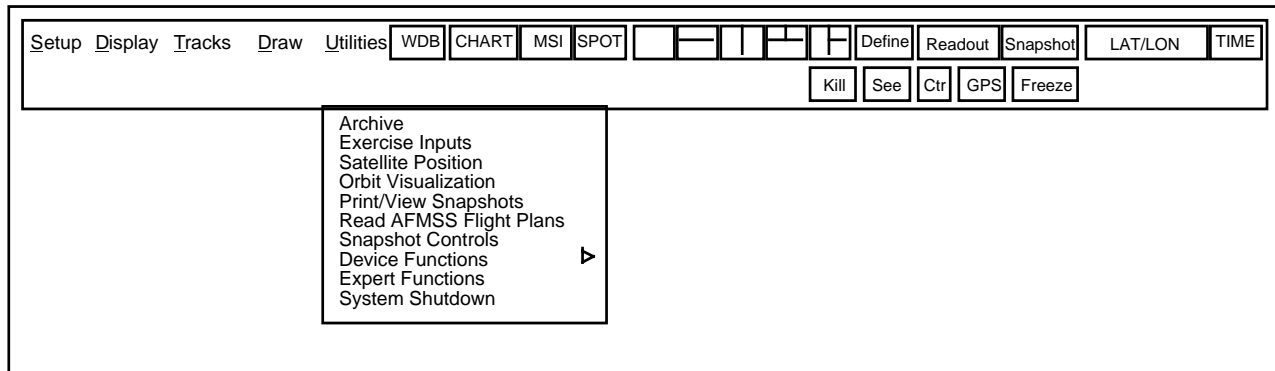
Figure 4.8.5-1 Utilities Submenu

4.8.5.1   Archive

This function allows the operator to save recorded data to a magnetic tape. When "ARCHIVE" is selected, the *Archive* submenu appears (Figure 4.8.5.1-1). One entry always seen in the Data Files List is 'Screen-Saves'. This represents all of the screen snapshots recorded and not yet purged.

Figure 4.8.5.1-1 Archive

- To archive data files:

  1. Select the files to save by clicking on each file name.

  2. When selection is complete, click on the *ARCHIVE* button.

  3. Enter the device path for the tape drive (If different from default) then click "OK".

- To delete data files:

  1. Select the files to delete by clicking on each file name.

  2. When finished, click the *DELETE* button then click "OK".

  3. The files are permanently removed from the disk.

  4. Click the *QUIT* button to exit the archive function without taking any action.

The *HELP* button opens a help screen on the Archive function.

4.8.5.2 Exercise Inputs

The EXERCISE INPUTS function allows the operator to input artificial threats for exercise purposes. When clicked, the *Exercise List* menu is presented (Figure 4.8.5.2-1).
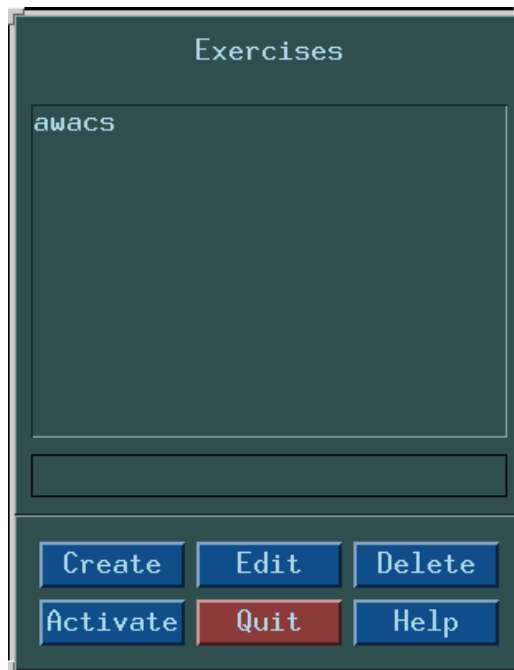
Figure 4.8.5.2-1 Exercise List Menu

There are six action buttons on the *Exercise List* menu.

"CREATE" - generates the *Exercise* menu (Figure 4.8.5.2-2).

Figure 4.8.5.2-2 Exercise Menu

- To create an exercise file:

    1. Fill in the blanks corresponding to each numbered entry. There are two methods to enter the latitude and longitude of where the threat is to appear.

    2. Manually enter the information or,

    3. Click a point on any map then click "GET POINT". This populates the next empty line with the latitude and longitude of the selected point.

- To enter the name:

    1. Manually type the name selected in or click any of the names from the scroll list located on the right side of the menu.

    2. Enter a delay time in minutes. The delay time tells ABI how long to wait after mission start-up before generating the threat.

- To save the file:

    1. Enter a file name.

    2. Click "SAVE AS". The file is saved under the name it was assigned.

- To delete a threat:

    1. Enter the threat number next to the *DELETE* button.

2. Click "DELETE", the threat is deleted.

- To edit a pre-existing file:

    1. Click the file name.

    2. Click "EDIT". This generates the *Exercise* menu with the file data listed in the data blocks.

- To delete a pre-existing file:

    1. Click the file name.

    2. Click "DELETE". The file is then permanently removed.

- To activate a file:

    1. Select the file by clicking on the file name.

    2. Click "ACTIVATE".

    3. A recently created exercise file may be used by clicking "ACTIVATE" from the Exercise Menu.

"QUIT" exits the *Exercise List* menu without any changes.

"HELP" generates a help screen for the *Exercise* menus.

4.8.5.3 Satellite Position

The SATELLITE POSITION function is designed to assist the operator in aiming a directional UHF ground antenna. When clicked, the Satellite Position Window opens (Figure 4.8.5.3-1).

Figure 4.8.5.3-1 Satellite Position Window

To compute the azimuth and elevation to aim the antenna, enter the station's location either by typing in the Lat/Lon or by clicking a point in any 2D window then clicking "GET POINT". Next, enter the longitude of the targeted satellite. If desired, the operator can choose from one of the four satellites already entered (Atlantic, CONUS, Indian, or Pacific). When finished, click "COMPUTE". The azimuth and elevation are printed in the status line. If the elevation is negative, the station is not within the footprint of that satellite. Click "QUIT" to remove the window. Clicking "HELP" opens a help window on satellite position.

4.8.5.4   Orbit Visualization

When selected, a 3-screen display is opened. The upper left window contains WDB and automatically defaults to displaying the satellites ground tracks. The upper right window contains a 3D Earth display (Figure 4.8.5.4-1).

The 3D world display can show a satellite's name, orbit path, ground track, stick pin location over the Earth, cones of coverage, and sunlight shading. To manipulate the Earth, press and hold the left button. Moving the cursor rotates and tilts the Earth depending on the direction of cursor displacement. To zoom in or out, press and hold the right button and displace the cursor.
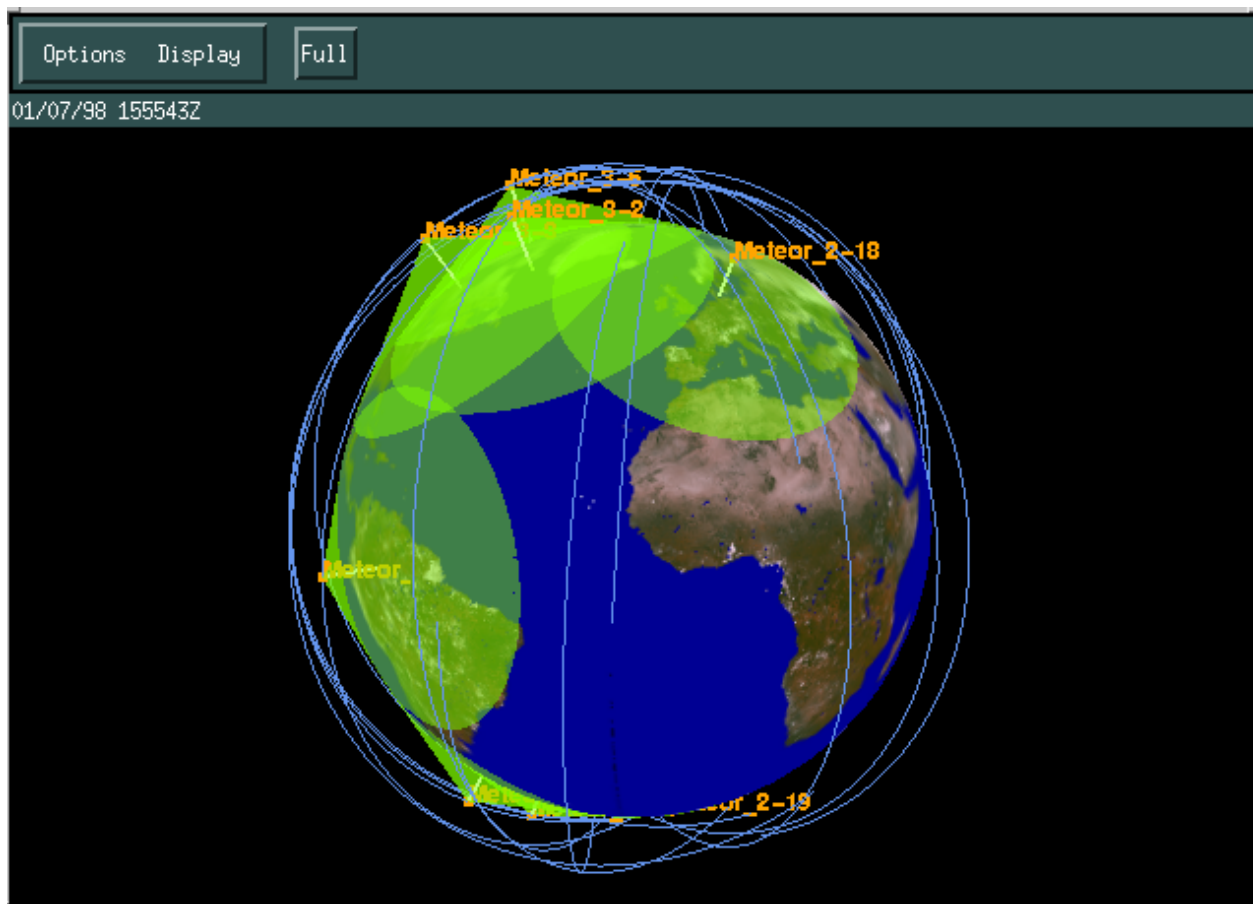
Figure 4.8.5.4-1 3D Satellite Display

Selecting the *OPTIONS* button opens a menu with three items; "SATELLITES", "SET TIME", and "QUIT". Selecting "SATELLITES" opens the satellite menu covered in Section 4.8.1.7. Selecting "SET TIME" opens the Time Set Window (Figure 4.8.5.4-2).
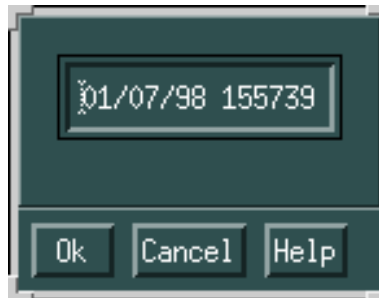
Figure 4.8.5.4-2 Time Set Window

- To set, enter the desired Zulu date and time. The operator may enter future or past times in order to preview or review satellite coverage. When finished, click "OK". Clicking "CANCEL" removes the box without resetting the time. Clicking "HELP" opens a help screen. Once the time has been set, four buttons appear in the 3D window that allow the operator to control the speed of a satellite's orbit. The operator may select one times the natural speed, ten times the natural speed, or fifty times the natural speed. Selecting Real Time resets the display to the current Zulu date and time.

    − Selecting "QUIT" from the *OPTIONS* menu closes the 3D world display.

    − Selecting "DISPLAY" opens a menu with six toggle buttons that turn on/off orbital paths, ground tracks, stick pins, names, sunlight shading, and sensor coverage.

In addition to displaying satellites, current date/time settings and any areas of interest are also displayed.

The lower window of the 3D-screen display shows the satellite coverage based on a operator selected point on the Earth (Figure 4.8.5.4-3).

Figure 4.8.5.4-3 Satellite Coverage

4-66

- To generate satellite coverage, click the desired point in the WDB Window then click "GET POINT" or enter the latitude and longitude. Click "COMPUTE" to display the satellite coverage. This coverage starts at the current Zulu date and time and spans a 24 hour period. To determine satellite coverage for a different time period, enter the desired starting date and time then click "COMPUTE" to generate the coverage for the next 24 hours. Clicking the *SATELLITES* button opens the window described in Section 4.8.1.7.   Clicking "QUIT" removes the window. Clicking "HELP" opens a help menu on orbit visualization.

If an equivalence class has been set up for a group of satellites, the Equivalence Satellite Coverage Window reflects the number of satellites over a particular point at a particular time (Figure 4.8.5.4-4).
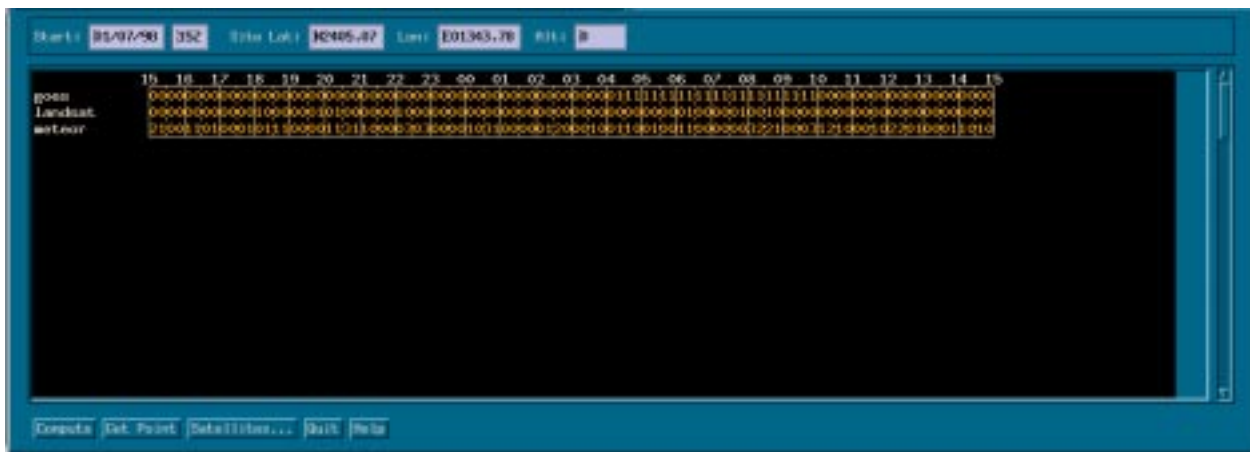
Figure 4.8.5.4-4 Equivalence Satellite Coverage Window

4.8.5.5   Print/View Snapshot

The PRINT/VIEW function allows the operator to view, rename, or delete previously generated screen dumps. When clicked, the View Snapshot Window opens (Figure 4.8.5.5-1).
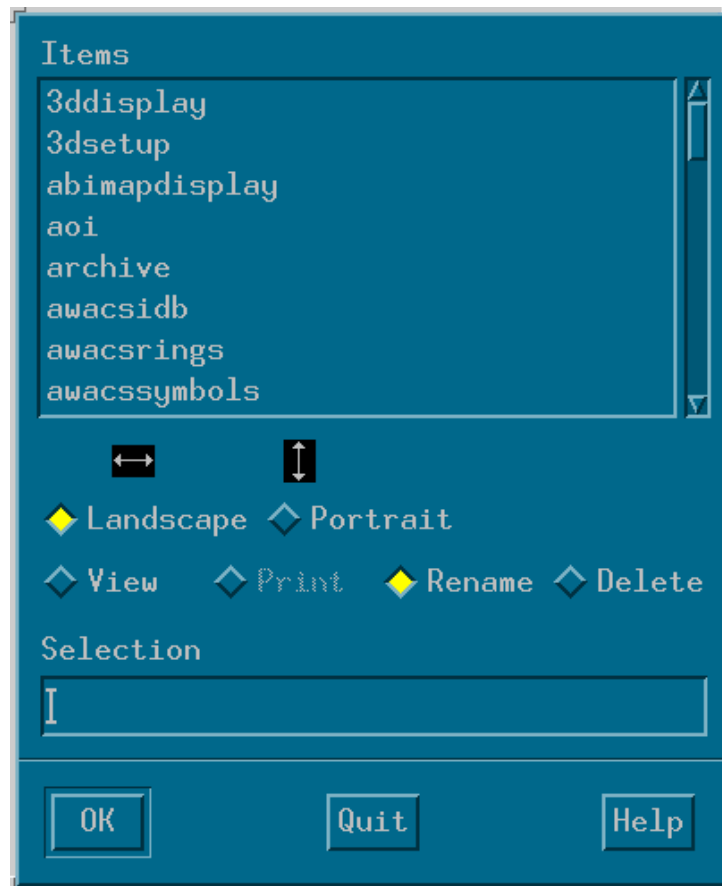
Figure 4.8.5.5-1 View Snapshot Window

When the *SNAPSHOT* button is pressed, ABI takes a picture of the screen and saves it to a file. The file name consists of the date (YYMMDD) and time (HHMMSS) the picture was taken. The latest picture is at the top of the list.

- To view a picture, click the file name, click "VIEW" then click "OK". The image fills the screen. To remove the picture, click the arrow in the upper left corner of the window and select QUIT.

- To rename a picture, click the file name, click "RENAME", then click "OK". The Rename Picture Window (Figure 4.8.5.5-2) opens. Enter the new name and click "OK" or click "QUIT" to exit.
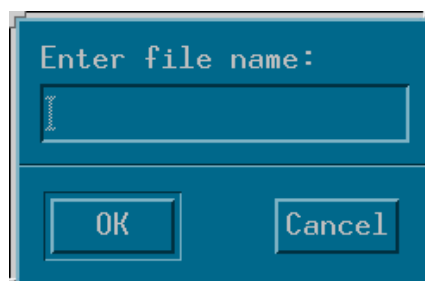
Figure 4.8.5.5-2 Rename Picture Window

- To delete a picture, click the file name, click "DELETE" then click "OK". The Delete Confirmation Window (Figure 4.8.5.5-3) opens. Click "OK" to permanently delete the picture or "CANCEL" to exit.

```
Please confirm file deletion:

    OK          Cancel
```
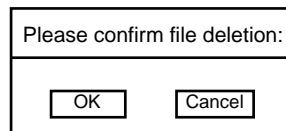
Figure 4.8.5.5-3 Delete Confirmation Window

- To exit the View Snapshot Window, click the *QUIT* button. Clicking the *HELP* button opens a help screen on Print/View Snapshot Window.

4.8.5.6   Read AFMSS Flight Plans

The READ AFMSS FLIGHT PLANS allows the operator to load flight plans created on the AFMSS system. When clicked, the Read AFMSS Flight Plans Window opens (Figure 4.8.5.6-1).
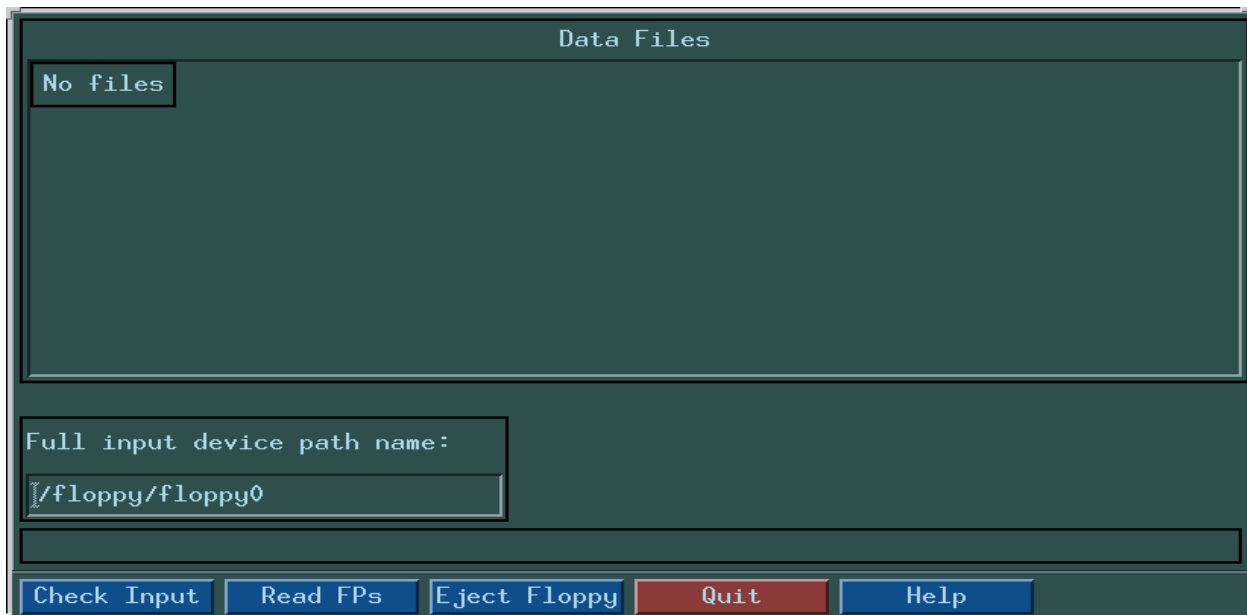
Figure 4.8.5.6-1 Read AFMSS Flight Plans Window

Specify the input path then click CHECK INPUT to update the list of data files. Select a flight plan then click READ FPS to load the data. When the flight plan is loaded, the route edit window (Figure 4.8.1.3-

3) is presented with the flight plan information loaded. Click EJECT FLOPPY to eject the floppy disk. To remove the window without loading a flight plan, click QUIT. Click HELP to open a help screen on reading AFMSS flight plans.

4.8.5.7 Snapshot Controls

The SNAPSHOT CONTROLS function allows the operator to set the time interval between automatic SNAPSHOTs and select a title banner to appear on each picture. When clicked, the Snapshot Controls Window opens (Figure 4.8.5.7-1).
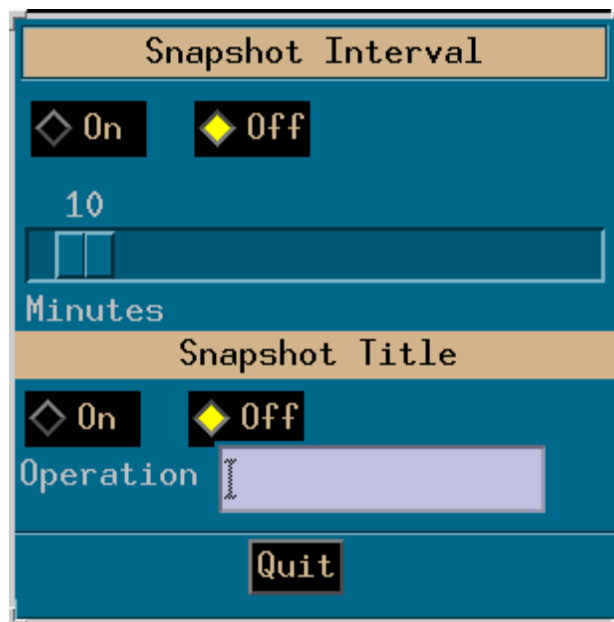
Figure 4.8.5.7-1 Snapshot Controls Window

With the Snapshot interval turned ON, the slider becomes active, indicating how long, in minutes, between screen saves. This interval can be adjusted by pressing the button on the slider and dragging it left to decrease the interval or dragging it right to increase the interval. If the Snapshot interval is OFF, the value indicated by the slider is ignored and no snapshots are taken unless the *SNAPSHOT* button on the Executive Banner is clicked. If the hard drive reaches 95% full, the automatic SNAPSHOT function is disabled.

The Snapshot Title allows the operator to place a small title banner on each snapshot as a reminder of when or where the picture was taken. When finished, click "QUIT" to remove the window.

4.8.5.8 Device Functions

ABI has three devices used for input and output. They are an internal 3.5 floppy drive, a 4mm tape drive and a CD-ROM drive. If the tape drive or CD-ROM is connected when the ABI is powered on, it

automatically mounts and is ready for use. When "DEVICE FUNCTIONS" is clicked, the *Device Functions* submenu appears (Figure 4.5.5.8-1).
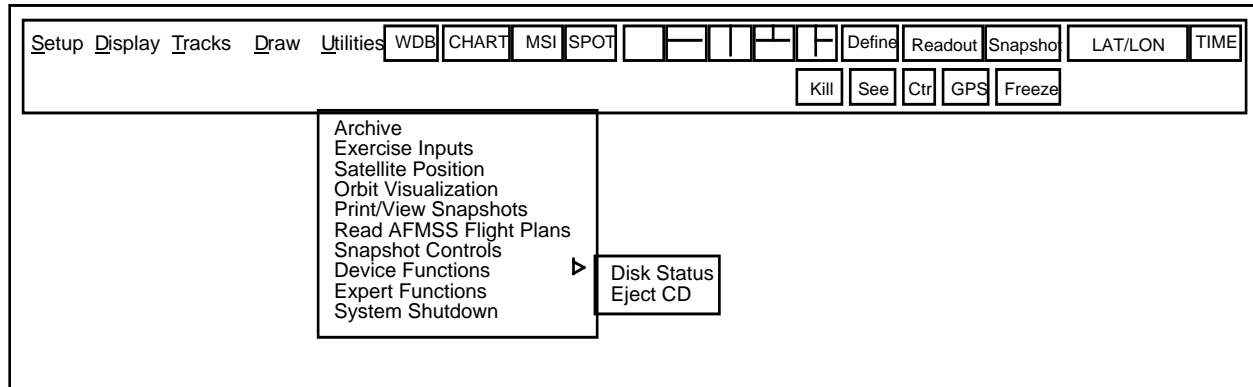
Figure 4.8.5.8-1 Device Functions Submenu

4.8.5.8.1   Disk Status

When loading a chart or image, it is important to make sure there is enough disk space available to store the image. Disk Status tells the operator what percentage of disk space is in use and how many megabytes (MB) are available. When "DISK STATUS" is clicked, the Disk Status Window opens (Figure 4.8.5.8.1-1).
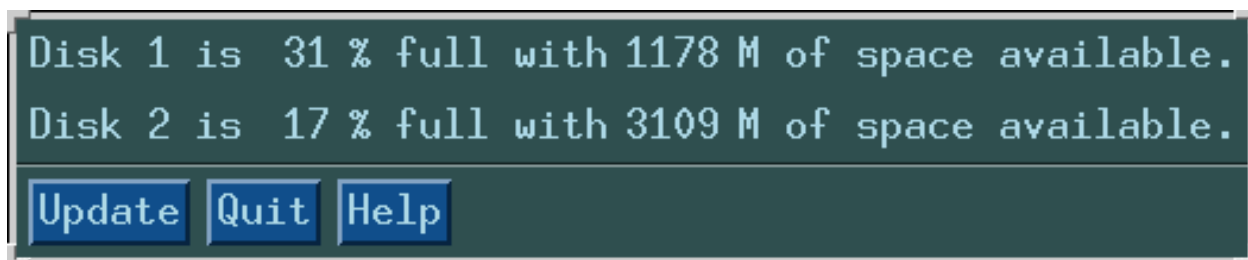
Figure 4.8.5.8.1-1 Disk Status Window

The used space on each disk is presented as a percentage of the entire disk. The remaining space is then displayed in megabytes. Clicking "UPDATE" refreshes the screen with the latest information. Clicking "QUIT" removes the window. Clicking "HELP" opens a help screen on the Disk Status Window.

4.8.5.8.2   Eject CD

When the operator is finished using a CD, clicking "EJECT CD" ejects the CD from the CD-ROM device. There is no need to manually unmount the CD since this is inherent in the eject command.

CAUTION
The door on the Codar chassis must be open before ejecting a CD ROM or damage to the unit could result. The CD ROM shuttle will not retract if it encounters resistance while ejecting. The eject motor will continue to push on the door if closed, and strip plastic gears or burn out the motor.

4.8.5.9   Expert Functions

This section contains features normally not used by the operator. These functions are diagnostic or administrative in nature and are of little use to the operator. They are explained here for completeness but should only be used when directed by support staff. When "EXPERT FUNCTIONS" is clicked, the *Expert Functions* submenu appears (Figure 4.8.5.9-1).
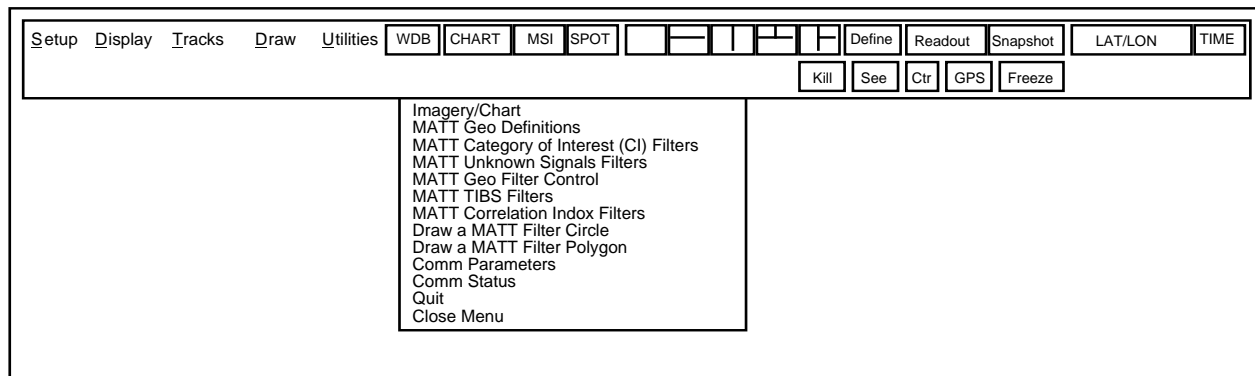
Figure 4.8.5.9-1 Expert Functions Submenu

NOTE
Changing any of the default settings may adversely affect the operation of the ABI. These functions should only be used when told to do so by depot personnel.

4.8.5.9.1   Imagery/Charts

IMAGERY/CHARTS allows the operator to load or delete ADRG charts, MSI, and SPOT into the ABI database. Clicking "IMAGERY/CHARTS" opens the *Imagery Charts* submenu (Figure 4.8.5.9.1-1).
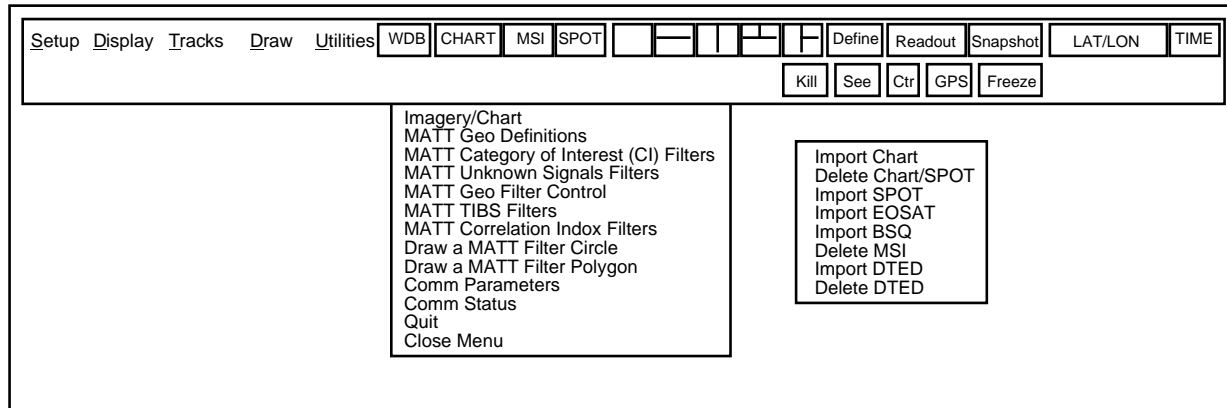
Figure 4.8.5.9.1-1 Imagery/Charts

4.8.5.9.1.1 Import Charts

IMPORT CHARTS allows the operator to import ADRG charts. When IMPORT CHARTS is clicked, the *Chart Import* Menu appears (Figure 4.8.5.9.1.1-1).
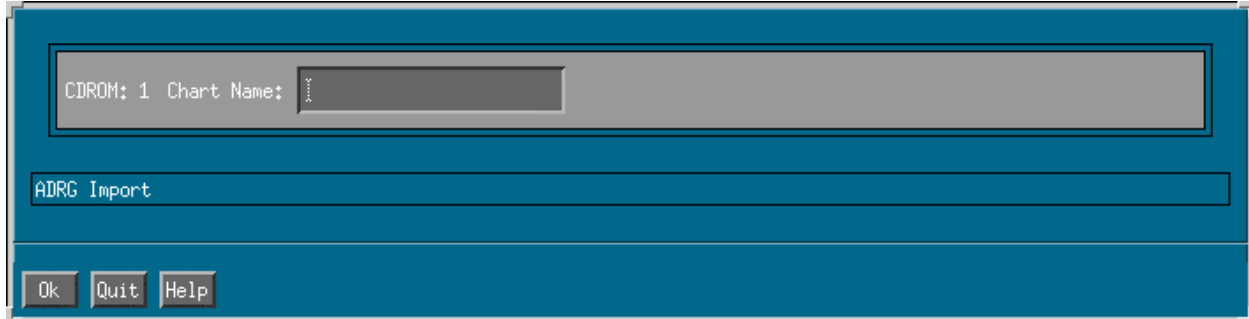
Figure 4.8.5.9.1.1-1 Chart Import Menu

- To import a chart, load the CD into the CDROM. Enter the name of the chart in the Chart Name field. Click "OK". A message will appear in the status line when the load is complete. It usually takes approximately 1.5-2 hours to load a chart. To remove the window, click "QUIT". Clicking "HELP" opens a help screen on Chart Importing.

4.8.5.9.1.2 Delete Chart/SPOT

DELETE allows the operator to remove an ADRG chart or SPOT (ADRI) scene from the database. When clicked, the *Chart/SPOT Delete* menu appears (Figure 4.8.5.9.1.2-1).
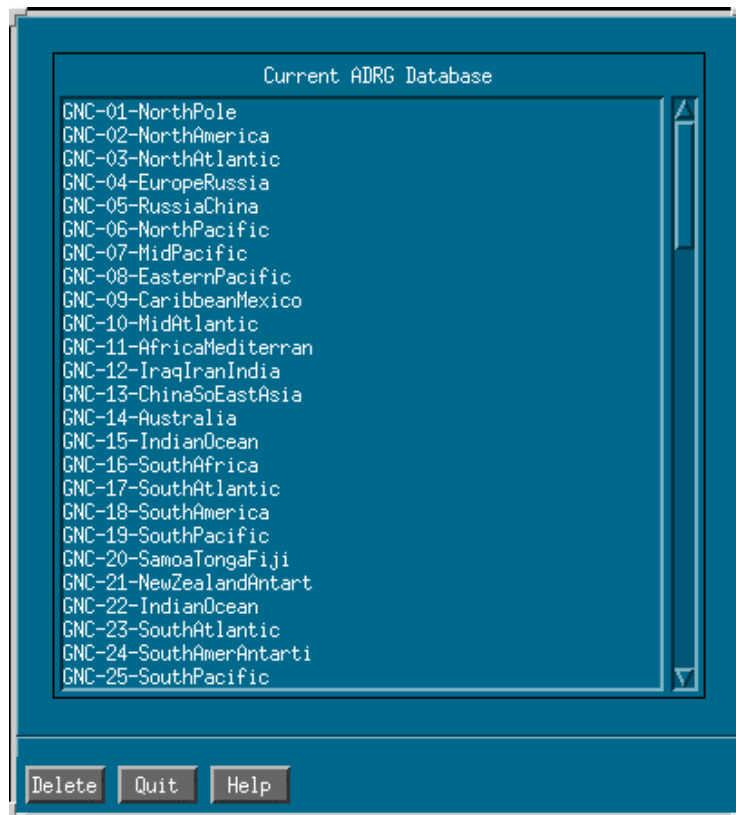
Figure 4.8.5.9.1.2-1 Chart/SPOT Delete Menu

Select the charts or SPOT scenes to be deleted by clicking on the name. Once the operator has selected which charts or SPOT scenes to delete, click the "DELETE" button.

NOTE
Deleting a chart permanently removes it from the disk. The only way to recover a deleted chart is to re-import it.

Clicking "QUIT" removes the Delete Window. Clicking "HELP" opens a help screen on deleting a chart or SPOT scene.

4.8.5.9.1.3   Import SPOT and Import MSI (AMC Only)

Importing SPOT and MSI imagery is beyond the scope of this manual. Instructions on how to perform these tasks will be distributed in a separate annex to selected users.

4.8.5.9.1.4   Delete MSI (AMC Only)

DELETE MSI allows the operator to permanently remove an MSI scene from the database. When clicked, the *Delete MSI* menu appears (Figure 4.8.5.9.1.4-1).
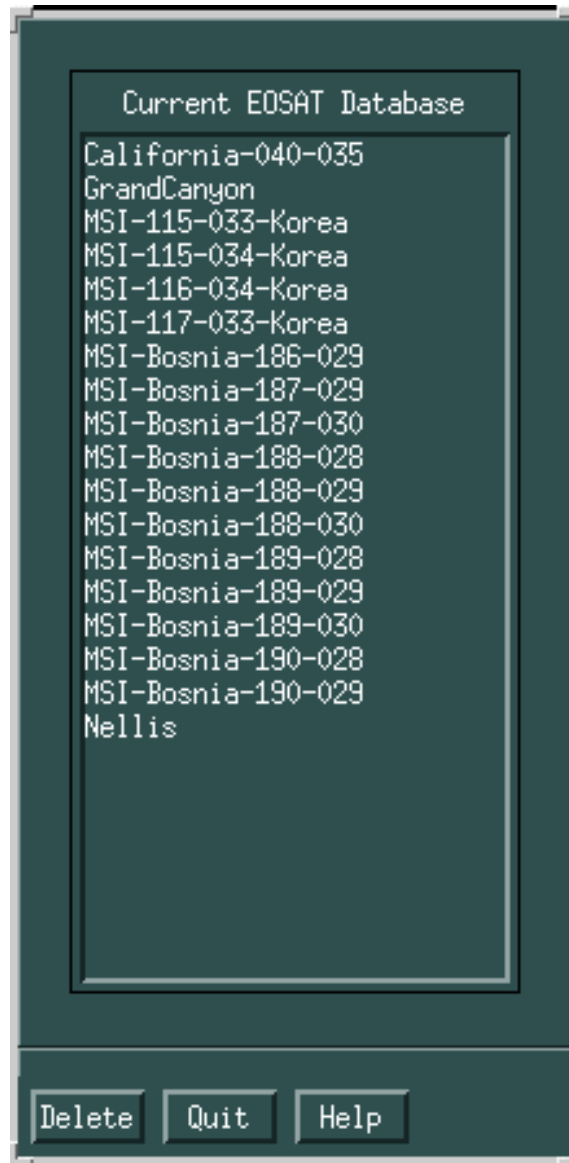
Figure 4.8.5.9.1.4-1 Delete MSI Menu

Select the MSI scenes to be deleted by clicking on the name. Once the operator has selected which MSI scenes to delete, click the *DELETE* button. To remove the window, click "QUIT". Clicking "HELP" opens a help screen on deleting MSI.

4.8.5.9.1.5 Import DTED

"IMPORT DTED" allows the operator to import Digital Terrain Elevation Data (DTED) to provide 3-D capability to certain geographical areas. When clicked, the *Import DTED* menu appears (Figure 4.8.5.9.1.5-1).
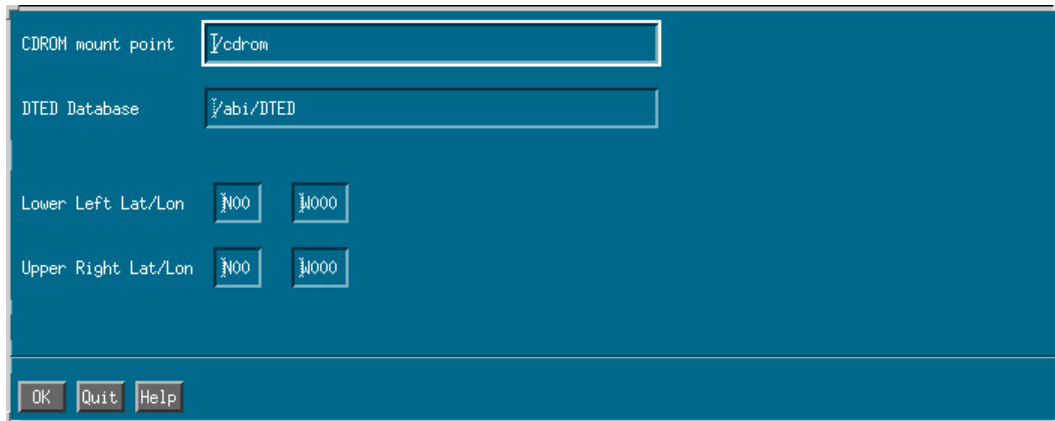
Figure 4.8.5.9.1.5-1 Import DTED Menu

To import DTED, load the CDROM with the DTED CD. Enter the lower left and upper right Lat/Longs then click "OK". The CDROM mount point and DTED database values do not have to be changed. To remove the window, click the *QUIT* button. Clicking "HELP" opens a help screen on importing DTED.

4.8.5.9.1.6 Delete DTED

DELETE DTED allows the operator to delete any previously loaded DTED data. When clicked, the *Delete DTED* menu appears (Figure 4.8.5.9.1.6-1).
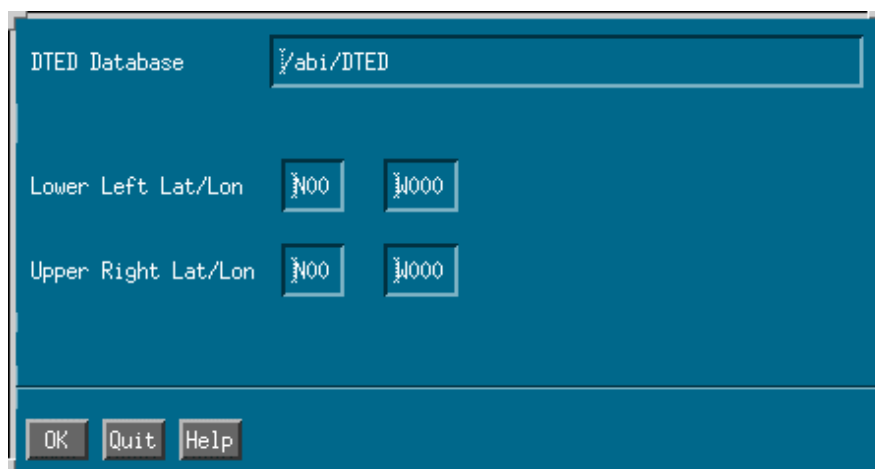
Figure 4.8.5.9.1.6-1 Delete DTED Menu

To delete DTED, enter the lower left and upper right Lat/Longs then click "OK". The DTED database values do not have to be changed. The DTED is then deleted from the database. To remove the window, click the *QUIT* button. Clicking the *HELP* button opens a help screen on deleting DTED.

4.8.5.9.2   MATT Geo Definitions

The MATT GEO DEFINITIONS function under EXPERT FUNCTIONS provides the operator with a method to filter the amount of threat data coming from the MATT radio. These are inclusive geographic filters. To initiate this function, click MATT GEO DEFINITIONS in the EXPERT FUNCTIONS menu. When this action is completed, the MATT Geo Definitions Setup Window (Figure 4.8.5.9.2-1) opens.

Figure 4.8.5.9.2-1 MATT Geo Definitions Setup Window

The MATT Geo Definitions Setup window provides an easy means to create and edit threat data filters.

- To create a filter:

    1.   Click CREATE from the MATT Geo Definitions Setup Window to open the MATT Geo Definitions Create Window (Figure 4.8.5.9.2-2).

Figure 4.8.5.9.2-2 MATT Geo Definitions Create Window

2.   Enter the filter name.

3.   Select the filter type (CIRCULAR, POLYGON3, POLYGON4, POLYGON5, or POLYGON6).

4a.   If CIRCULAR was chosen, enter the latitude and longitude values for the center point and the radius of the circle.

4b.   If POLYGON was chosen, enter the corner point coordinates for the polygon.

5.   Click OK when finished to create the filter. Click QUIT to close the MATT Geo Definitions Create window without creating a filter. Click HELP to view a help screen.

•   To edit a filter:

1.   Select a filter name from the list and click EDIT. The MATT Geo Definitions Edit Window (Figure 4.8.5.9.2-3) opens with the filter parameters entered.

Figure 4.8.5.9.2-3 MATT Geo Definitions Edit Window

2.   Edit the values as needed.

3.   Click OK to accept the changes or click QUIT to close the window without making any changes. Click HELP to view a help screen.

•   To delete a filter:

1.   Select a filter name.

2.   Click DELETE. The filter is deleted.

The QUIT button allows the operator to close the MATT Geo Definitions Setup window without making any changes or revisions.

The HELP button provides a screen display providing instruction on the use of the MATT Geo Definitions Setup window.

4.8.5.9.3 MATT Category of Interest (CI) Filter

The MATT CATEGORY OF INTEREST FILTER function under EXPERT FUNCTIONS provides the operator with a method to filter the threat data coming from the MATT radio by category of interest. To initiate this function, click MATT CATEGORY OF INTEREST FILTER in the EXPERT FUNCTIONS menu. When this action is completed, the MATT Category of Interest Filter Setup Window (Figure 4.8.5.9.3-1) opens.

Figure 4.8.5.9.3-1 MATT Category of Interest Filter Setup Window

- To create a filter:

    1. Click CREATE from the MATT Category of Interest Filter Setup Window to open the MATT Category of Interest Filter Create Window (Figure 4.8.5.9.3-2).

Figure 4.8.5.9.3-2 MATT Category of Interest Filter Create Window

2.   Enter the category of interest values as desired. Consult the "Classified Supplement to the System Operator's Manual for the Multi-Mission Advanced Tactical Terminal", section 10.2 for further information.

3.   Click OK when finished to create the filter. Click QUIT to close the MATT Category of Interest Filter Create window without creating a filter. Click HELP to view a help screen.

- To edit a filter:

    1.   Select a filter name from the list and click EDIT. The MATT Category of Interest Filter Edit Window opens with the filter parameters entered.

    2.   Edit the values as needed.

    3.   Click OK to accept the changes or click QUIT to close the window without making any changes. Click HELP to view a help screen.

- To delete a filter:

    1.   Select a filter name.

    2.   Click DELETE. The filter is deleted.

The QUIT button allows the operator to close the MATT Category of Interest Filter Setup window without making any changes or revisions.

The HELP button provides a screen display providing instruction on the use of the MATT Category of Interest Filter Setup window.

4.8.5.9.4   MATT Unknown Signals Filter

The MATT UNKNOWN SIGNALS FILTER function under EXPERT FUNCTIONS provides the operator with a method to filter the threat data coming from the MATT radio by Unknown Signals. To initiate this function, click MATT UNKNOWN SIGNALS FILTER in the EXPERT FUNCTIONS menu. When this action is completed, the MATT Unknown Signals Filter Setup Window (Figure 4.8.5.9.4-1) opens.

Figure 4.8.5.9.4-1 MATT Unknown Signals Filter Setup Window

- To create a filter:

    1.   Click CREATE from the MATT Unknown Signals Filter Setup Window to open the MATT Unknown Signals Filter Create Window (Figure 4.8.5.9.4-2).

Figure 4.8.5.9.4-2 MATT Unknown Signals Filter Create Window

    2.   Enter the Unknown Signals values as desired. Consult the "Classified Supplement to the System Operator's Manual for the Multi-Mission Advanced Tactical Terminal", section 10.3 for further information.

    3.   Click OK when finished to create the filter. Click QUIT to close the MATT Unknown Signals Filter Create window without creating a filter. Click HELP to view a help screen.

- To edit a filter:

    1.   Select a filter name from the list and click EDIT. The MATT Unknown Signals Filter Edit Window opens with the filter parameters entered.

    2.   Edit the values as needed.

    3.   Click OK to accept the changes or click QUIT to close the window without making any changes. Click HELP to view a help screen.

- To delete a filter:

    1.   Select a filter name.

    2.   Click DELETE. The filter is deleted.

The QUIT button allows the operator to close the MATT Unknown Signals Filter Setup window without making any changes or revisions.

The HELP button provides a screen display providing instruction on the use of the MATT Unknown Signals FilterSetup window.

4.8.5.9.5   MATT Geo Filter Control

The MATT GEO FILTER CONTROL function under EXPERT FUNCTIONS provides the operator with a method to filter the threat data coming from the MATT radio. To initiate this function, click MATT GEO FILTER CONTROL in the EXPERT FUNCTIONS menu. When this action is completed, the MATT Geo Filter Control Setup Window (Figure 4.8.5.9.5-1) opens.
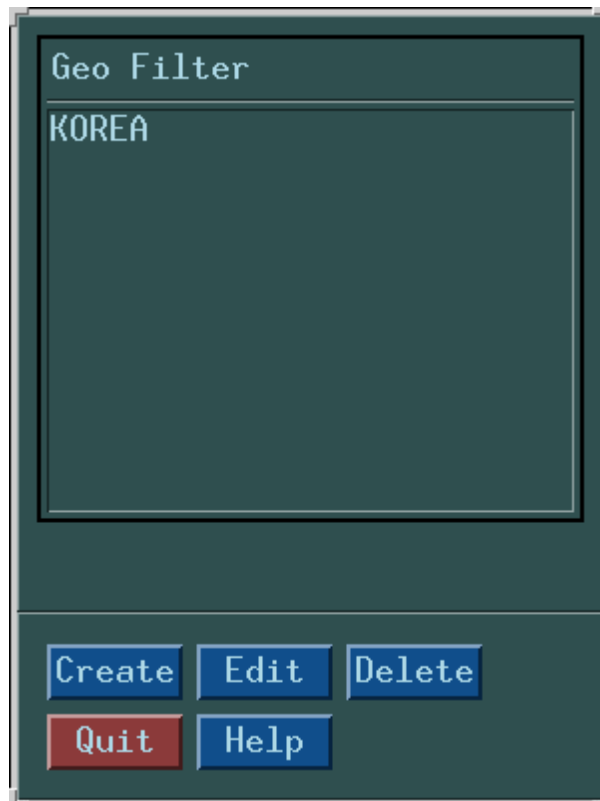
Figure 4.8.5.9.5-1 MATT Geo Filter Control Setup Window

- To create a filter:

    1.   Click CREATE from the MATT Geo Filter Control Setup Window to open the MATT Geo Filter Control Create Window (Figure 4.8.5.9.5-2).

Figure 4.8.5.9.5-2 MATT Geo Filter Control Create Window

2. Enter the Geo Filter Control values as desired. Consult the "Classified Supplement to the System Operator's Manual for the Multi-Mission Advanced Tactical Terminal" for further information.

3. Click OK when finished to create the filter. Click QUIT to close the MATT Geo Filter Control Create window without creating a filter. Click HELP to view a help screen.

- To edit a filter:

    1. Select a filter name from the list and click EDIT. The MATT Geo Filter Control Edit Window opens with the filter parameters entered.

    2. Edit the values as needed.

    3. Click OK to accept the changes or click QUIT to close the window without making any changes. Click HELP to view a help screen.

- To delete a filter:

    1. Select a filter name.

    2. Click DELETE. The filter is deleted.

The QUIT button allows the operator to close the MATT Geo Filter Control Setup window without making any changes or revisions.

The HELP button provides a screen display providing instruction on the use of the MATT Geo Filter Control Setup window.

4.8.5.9.6 MATT TIBS Filter

The MATT TIBS FILTER function under EXPERT FUNCTIONS provides the operator with a method to filter the threat data coming from the MATT radio. To initiate this function, click MATT TIBS FILTER in the EXPERT FUNCTIONS menu. When this action is completed, the MATT TIBS Filter Setup Window (Figure 4.8.5.9.6-1) opens.

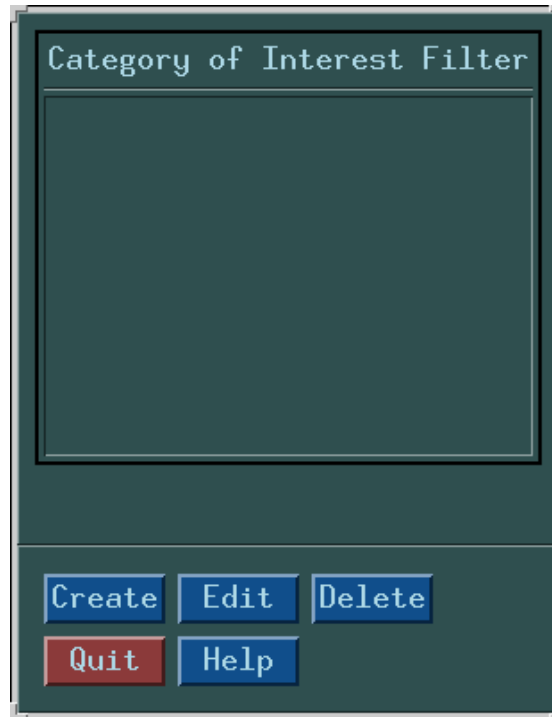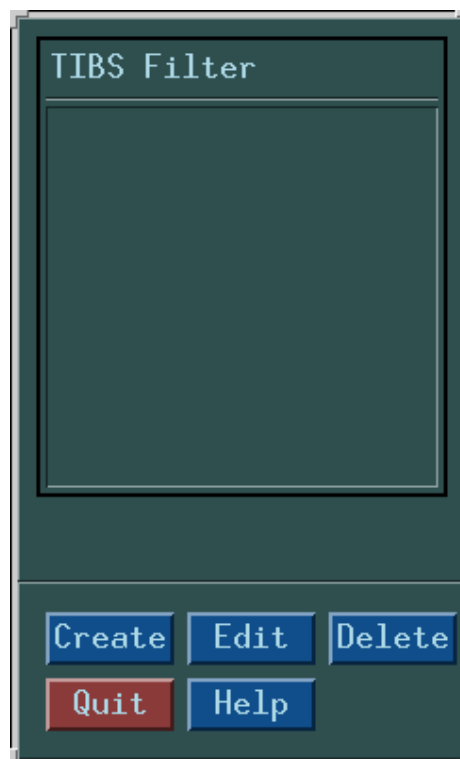*Figure 4.8.5.9.6-1 MATT TIBS Filter Setup Window*

- To create a filter:

    1.   Click CREATE from the MATT TIBS Filter Setup Window to open the MATT TIBS Filter Create Window (Figure 4.8.5.9.6-2).

Figure 4.8.5.9.6-2 MATT TIBS Filter Create Window

2.   Enter the TIBS Filter values as desired. Consult the "Classified Supplement to the System Operator's Manual for the Multi-Mission Advanced Tactical Terminal" for further information.

3.   Click OK when finished to create the filter. Click QUIT to close the MATT TIBS Filter Create window without creating a filter. Click HELP to view a help screen.

• To edit a filter:

1.   Select a filter name from the list and click EDIT. The MATT TIBS Filter Edit Window opens with the filter parameters entered.

2.   Edit the values as needed.

3.   Click OK to accept the changes or click QUIT to close the window without making any changes. Click HELP to view a help screen.

- To delete a filter:

    1.   Select a filter name.

    2.   Click DELETE. The filter is deleted.

The QUIT button allows the operator to close the MATT TIBS Filter Setup window without making any changes or revisions.

The HELP button provides a screen display providing instruction on the use of the MATT TIBS Filter Setup window.

4.8.5.9.7   MATT Correlation Index Filter

The MATT CORRELATION INDEX FILTER function under EXPERT FUNCTIONS provides the operator with a method to filter the threat data coming from the MATT radio. To initiate this function, click MATT CORRELATION INDEX FILTER in the EXPERT FUNCTIONS menu. When this action is completed, the MATT Correlation Index Filter Setup Window (Figure 4.8.5.9.7-1) opens.
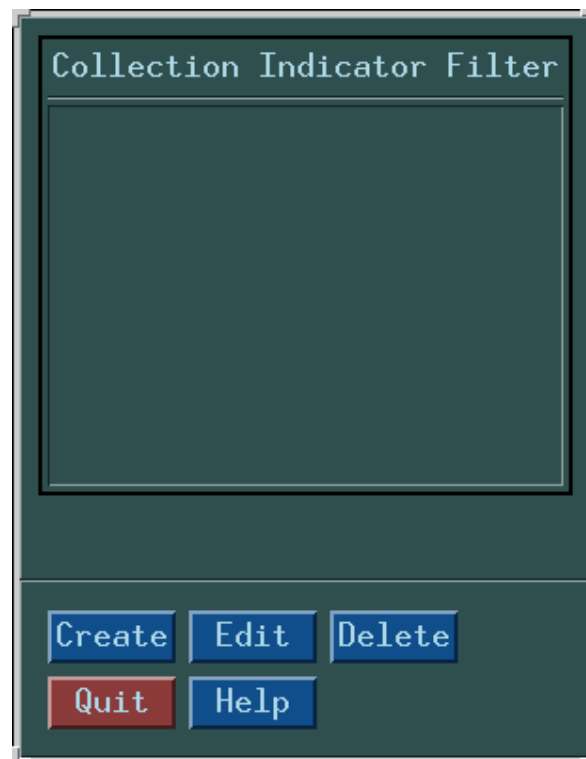
Figure 4.8.5.9.7-1 MATT Correlation Index Filter Setup Window

- To create a filter:

    1. Click CREATE from the MATT Correlation Index Filter Setup Window to open the MATT Correlation Index Filter Create Window (Figure 4.8.5.9.7-2).

Figure 4.8.5.9.7-2 MATT Correlation Index Filter Create Window

    2. Enter the Correlation Index Filter values as desired. Consult the "Classified Supplement to the System Operator's Manual for the Multi-Mission Advanced Tactical Terminal" for further information.

    3. Click OK when finished to create the filter. Click QUIT to close the MATT Correlation Index Filter Create window without creating a filter. Click HELP to view a help screen.

- To edit a filter:

    1. Select a filter name from the list and click EDIT. The MATT Correlation Index Filter Edit Window opens with the filter parameters entered.

    2. Edit the values as needed.

    3. Click OK to accept the changes or click QUIT to close the window without making any changes. Click HELP to view a help screen.

- To delete a filter:

    1. Select a filter name.

    2. Click DELETE. The filter is deleted.

The QUIT button allows the operator to close the MATT Correlation Index Filter Setup window without making any changes or revisions.

The HELP button provides a screen display providing instruction on the use of the MATT Correlation Index Filter Setup window.

4.8.5.9.8   Draw a MATT Filter Circle

The DRAW A MATT FILTER CIRCLE function under EXPERT FUNCTIONS provides the operator with a method to create an inclusive geographic data filter to limit the threat data coming from the MATT radio. To initiate this function, click DRAW A MATT FILTER CIRCLE in the EXPERT FUNCTIONS menu. When this action is completed, the operator is prompted to select a window in which to draw. Simply click the desired window and the cursor changes to a pencil. The operator is confined to that window until drawing is complete. Also, when a window is selected, three drawing buttons appear at the top of that window. They are *ERASE LAST PT, STOP DRAW,* and *ERASE SHAPE.*

- To draw the circle:

    1. Press and hold the left button down at the center of the circle and scroll the cursor out away from the center. An interactive circle will be drawn showing how big the circle is.

    2. Consult the range and bearing display at the upper right hand corner of the drawing window to see the radius of the circle.

    3. When the circle is large enough, release the left button.

At this point, the MATT Filter Circle Window opens (Figure 4.8.5.9.8-1) with the appropriate information filled in. The operator must specify a filter name then click OK to create the new filter.

Figure 4.8.5.9.8-1 MATT Filter Circle Window

The QUIT button allows the operator to close the MATT Filter Circle Window without creating a filter.

The HELP button provides a screen display providing instruction on the use of the Filter Circle Window.

4.8.5.9.9   Draw a MATT Filter Polygon

The DRAW A MATT FILTER POLYGON function under EXPERT FUNCTIONS provides the operator with a method to create an inclusive geographic data filter to limit the threat data coming from the MATT radio. To initiate this function, click DRAW A MATT FILTER POLYGON in the EXPERT FUNCTIONS menu. When this action is completed, the operator is prompted to select a window in which to draw. Simply click the desired window and the cursor changes to a pencil. The operator is confined to that window until drawing is complete. Also, when a window is selected, three drawing buttons appear at the top of that window. They are *ERASE LAST PT, STOP DRAW,* and *ERASE SHAPE.*

- To draw the polygon:

    1.   Click at each desired point until completed (up to 6 points).

    2.   Click "STOP DRAW" if the number of sides desired is less than six.

At this point, the MATT Filter Polygon Window opens (Figure 4.8.5.9.9-1) with the appropriate information filled in. The operator must specify a filter name then click OK to create the new filter.

Figure 4.8.5.9.9-1 MATT Filter Polygon Window

The QUIT button allows the operator to close the MATT Filter Polygon Window without creating a filter.

The HELP button provides a screen display providing instruction on the use of the Filter Polygon Window.

4.8.5.9.10   Comm Parameters

The Comm Parameters Window tells the operator the settings for each of the ten communications ports in the ABI. Clicking on "COMM PARAMETERS" produces the Comm Parameters Window (Figure 4.8.5.9.10-1).

NOTE
Comm Parameters should NOT be changed unless directed by depot level maintenance.
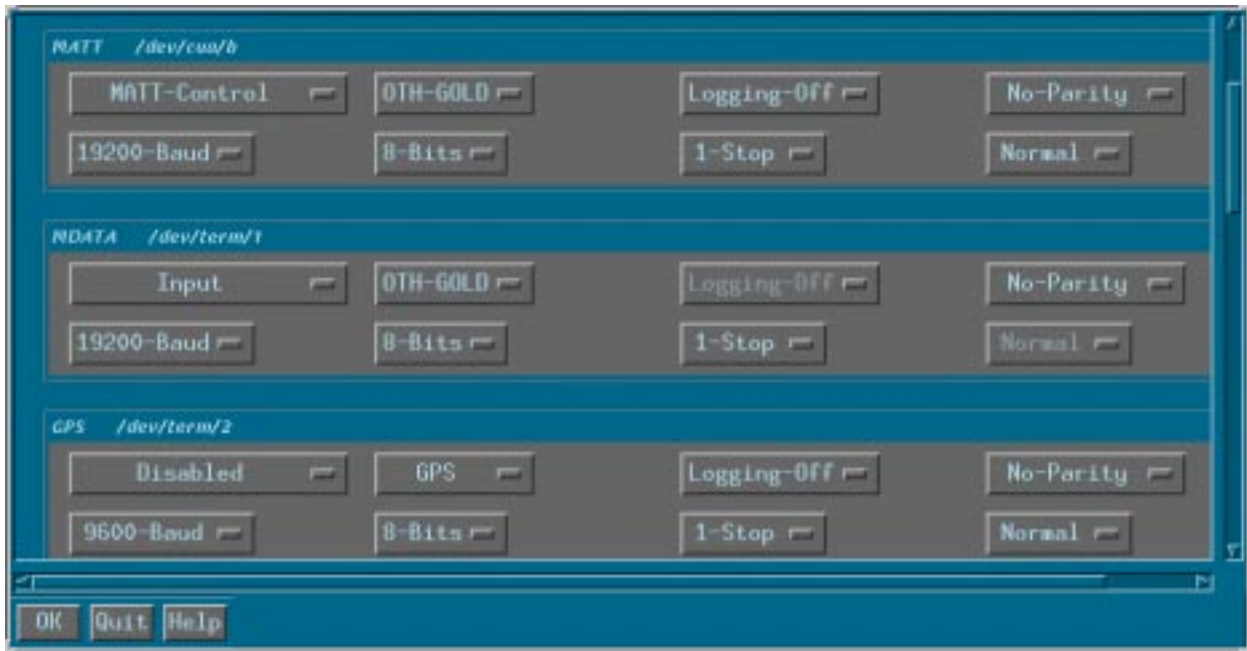
Figure 4.8.5.9.10-1 Comm Parameters Window

Each of the parameters for a particular port are set by clicking the button and selecting from a predetermined menu.

CAUTION
These systems are hardwired to the GPS. The comm parameters should never need to be changed. Doing so causes problems in receiving GPS. The values should only be changed when told to do so by depot personnel.

4.8.5.9.11   Comm Status

Figure 4.8.5.9.11-1, Comm Status window, presents the complete data on all Track databases, the usage of the internal memory tables, and the I/O status.

Figure 4.8.5.9.11-1 Comm Status Window

4.8.5.9.12   Quit

The QUIT function exits from ABI and returns the operator to the CIS environment.

- To access this option:

    1.   Click "QUIT". A confirmation box appears.

    2.   Click "OK" to quit the ABI program or click "CANCEL" to return.

4.8.5.9.13   Close Menu

This function closes the *Expert Function* menu.

4.8.5.10 System Shutdown

The SYSTEM SHUTDOWN option provides the operator with a means of properly shutting down the system.

- To access this option:

    1. Click "SYSTEM SHUTDOWN". A confirmation box appears.

    2. Click "OK" to continue the shutdown operation.

NOTE
It takes approximately one minute to shut down the system. DO NOT turn off ABI until prompted to do so.

CAUTION
Do not remove disk sleds until 10 seconds after shutdown.

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5.0 Notes

5.1 Glossary

Alert	Textual message, graphic display, or audio sound used to notify the user of the occurrence of a significant event within the system.
Area	A user-defined region used to filter tracks by geographic criteria.
Background Processing	Processing which continues to occur even when no users are connected to the system.
Baud Rate	A measurement of communications speed. X baud equals X signal elements per second.
Contact	A single observation of an entity of interest containing positional, identifying, and parametric information..
Correlation	The process of associating contacts to a track or a track to other tracks, consisting of unrelated observations of the same platform or facility. Associations are made by comparing information in the contact or track to the observed history of candidate tracks in the Track Database. Contacts or tracks are compared to candidates based on technical information such as ELINT parameters, geographic information, other observed attributes and on other systems' track number and derived identifications.
Event-by-Event	Real-time transmission of messages to an external system containing information reflecting Track Database changes.
Filter	A set of criteria used to include or exclude various tracks, contacts, or groups of contacts from map displays or screen out superfluous messages.
Iconify	The process of removing an active window from the screen and replacing it with a small icon. The process behind the window continues to operate in the background (see also Background Processing).
Login	The process of "Logging in" or gaining access to a system. Also, the string, code or user ID entered at the "Login:" prompt.
Message	Intelligence information received from an external system.
Motif	The window manager system used by AA.

Overlay	Set of user-created graphics that can be displayed on top of a map to annotate it.
Parsing	The process of breaking a data stream into its component parts to allow their analysis for semantic content.
Password	A secure word or text string, known only to the user (in theory), which further identifies that user to the system.
Pixel	Contraction of "Picture Element", one dot on the monitor.
Posit	Position reference, the geographic location of a track at a given instant.
Query	A command, containing a specific set of criteria, designed to retrieve specific information from a database.
Real-time	Current or clock time, as opposed to stepped or sequential. A real-time process demands immediate response without queueing, pausing or batching of queries or messages.
Rule	Any of a wide range of user-defined criteria used to filter message traffic, display tracks, define alerts or purge tracks.
Sensor	A mechanism used to detect a contact.
Source	Indication of the system that detected or transmitted the subject information.
System Alerts	Audio or printed signals informing the user of significant system events. In order of severity, they are Data, Status, Warning, Error and Severe Alerts.
Track	One or more contacts or groups of contacts associated with the same emitter, platform or facility.
Window	Rectangular region of the video display screen that acts as an independent display.
Zulu Time	Greenwich Mean Time. "Zulu" is the International Phonetic Alphabet equivalent of "Z", the letter designation of that time zone.

5.2 Acronyms

AA	Automatic Associator
AAA	Anti-Aircraft Artillery
ADEF TRK	Air Defense Track
AFEWC	Air Force Electronic Warfare Center
AFMC	Air Force Materiel Command
ANSI	American National Standards Institute
AOI	Area Of Interest
ASCII	American Standard Computer Information Interchange
ATC	Air Tactical Chart
BE	Basic Encyclopedia
BOF	Bypass Filters Off
BON	Bypass Filters On
CC	Country Code
CI	Correlation Index
CIS	Combat Intelligence System
CISF	Category of Identified Signals File
CNF	Current Equipment Configuration
COMSEC	Communications Security
CONF	Confidence Ellipse
CPU	Central Processing Unit
CPY	Copy
CR	Carriage Return
CRS	Combat Intelligence System Receiver Suite
CSOM	Computer System Operator's Manual
CSOT	CONSTANT SOURCE Operator's Terminal
CSRS	CONSTANT SOURCE Receiver Suite
DAW	Denied Area Weather
DB	Database
DEC	Digital Equipment Corporation
DEM	Demodulate
DIA	Defense Intelligence Agency
DIP	Dual In-Place
DIR	Directory Listing
DM	Data Manipulation
DOD	Department of Defense
DODIIS	Department of Defense Intelligence Information System
DOD-STD	Department of Defense Standard
DRG	Degrees/Radians/Gradient
DRR	Delete Record Request
DTG	Date-Time Group
ELINT	Electronic Intelligence
ELNOT	Electronic Intelligence Notation
EOB	Electronic Order of Battle
EOF	End of File
EPL	Emitter Parameters Limits
ESC	Electronic Systems Center
FLT	Filter Status Report
FON	Filter Request
FRPF	Filter Reference Point File

FTP	File Transfer Protocol
GCI	Ground-Controlled Intercept
GL	Geographic Location
GLF	Geographic Location File
GNC	Global Navigation Chart
HLP	Help
HP	Hewlett-Packard
HSP	High-Speed Printer
ICD	Interface Control Document
ICM	Intelligence Correlation Module
ID	Identification
IDB	Integrated Database
IDBTF	Integrated Database Transaction Format
IDHS	Intelligence Data Handling System
IEEE	Institute of Electric and Electronics Engineers
IIR	Imagery Interpretation Report
IMINT	Imagery Intelligence
IMOM	Improved Many-on-Many
JINTACCS	Joint Interoperability of Tactical Command and Control System
JNC	Jet Navigation Chart
JOG	Joint Operation Graphics
KBP	Keyboard Printer
L-14	Link 14
LAN	Local Area Network
LED	Light-Emitting Diode
LF	Line Feed
LOF	Log Off Request
LON	Log On Request
MA	Message Analysis
MB	Megabyte (1,000,000 Bytes)
MIIDS	Military Intelligence Integrated Data System
MIT	Massachusetts Institute of Technology
MMI	Man Machine Interface
MON	System Parameters Manager Log On Request
MP	Message Processing
MSS	Mission Support System
NATO	North Atlantic Treaty Organization
NOFORN	No Foreign Dissemination
NRT	Near Real Time
NTDS	Naval Tactical Display System
ONC	Ocean Navigation Chart
OSF	Open Software Foundation
OTE	Other
OTH	Over The Horizon
OTH-A	Over-the-Horizon Transaction Format Gold Revision A
OTH-B	Over-the-Horizon Transaction Format Gold Revision B
OTO	Operator To Operator
PIN	Position Identification Number
PRI	Pulse Repetition Interval
PW	Pulse Width
RADAR	Radio Detection And Ranging
RADINT	Radio Detection And Ranging Intelligence
RCR	Retransmit
RCV	Activate Receiver

RCVR	Receiver
RECCEXREP	Reconnaissance Exploitation Report
REXREP	Radio Detection And Ranging Exploitation Report
RF	Radio Frequency
RFR	Retrieve File Request
RRR	Replace Record Request
SAM	Surface-to-Air Missile
SCI	Special Compartmented Information
SCONUM	Ship Control Number
SCSI	Small Computer Systems Interface
SEDSCAF	Standard Electronic Intelligence Data Systems Codes and Formats
SENSOREP	Sensor Report
SIGINT	Signals Intelligence
SMB	System Menu Bar
SOI	Inclusion/Exclusion Filter
SPM	Systems Parameters Manager
SUM	Software User's Manual
SunOS	Sun Operating System
SYNC	Synchronization
SYS	System Status
TAB	Tabular
TAC	Terminal Access Controller
TACELINT	Tactical Electronic Intelligence
TACREP	Tactical Report
TACS	Tactical Air Control System
TADIL	Tactical Air Data Information Link
TBF	Tabular-print Format
TDDS	TRAP (Tactical Related Applications) Data Dissemination System
TDIMF	Tactical Digital Intercomputer Message Format
TDM	Track Data Manager
TENCAP	Tactical Exploitation of National Capabilities
TEOB	Tactical Electronic Order of Battle
TIBS	Tactical Information Broadcast Service
TIMF	Tactical Intercompter Message Format
TLM	Tactical Line Mercator
TOI	Time Of Intercept
TOPS	Tactical Operations Support Broadcast
TPC	Tactical Pilotage Chart
TRAP	Tactical Receive Equipment and Related Applications
TRE	Tactical Receive Equipment
TST	Test
UHF	Ultra-High Frequency
UPS	Uninterruptable Power Supply
USAF	United States Air Force
USPF	Unidentified Signal Parameters File
UTM	Universal Transverse Mercator
X	X Window System
X11R4	X11 Release 4
X11R5	X11 Release 5

APPENDIX A SYMBOLOGY

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A.1 TRAP SYMBOLOGY

Below is an explanation of the ABI symbols.

Red symbols	Red Force
Blue symbols	Blue Force
White/Yellow symbols	Commercial/Neutral
Square symbol	Land Based
Circular symbols	Sea Based
Triangular symbols	Airborne or subsurface (depending on which way triangle is pointed)

Below is an explanation of the MIL STD 2525 symbols.

Red symbols	Red Force
Blue symbols	Blue Force
Green symbols	Neutral
Yellow symbols	Unknown
Diamond symbols	Land or sea based hostile
Triangular symbols	Airborne or subsurface hostile (depending on which way triangle is pointed)
Square symbols	Land based friendly or unknown
Circular symbols	Sea based friendly
Half circular symbols	Airborne of subsurface friendly (depending on which way the circle is pointing)
Clover symbols	Land or sea based neutral
Half clover symbols	Airborne or subsurface neutral (depending on which leaf of the clover is missing)

Below is an explanation of the AWACS symbols.

Red symbols   Red Force

Green symbols   Blue Force

Yellow symbols   Neutral or Unknown

Symbols with a (text deleted).

The AEN symbol represents Arbitrary ELINT Notations. This is the "catch-all" for TRAP symbols. Any radar that does not map into one of the other symbols is given the AEN symbol.

Below is a list of the two letter identifiers associated with some TRAP symbols.

TA   Target Acquisition

NA   Navigation Aide

HF   Height Finder

ME   Meteorological

BS   Battlefield Surveillance

EW   Early Warning

Wx   Weather

AA   Anti-Aircraft

FC   Fire Control

SS   Surface Search

AI   Air Intercept

Any symbol with nothing inside represents a generic threat.

The four blue missile systems with letters next to the missile are (text deleted).

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Appendix B - Pre-Test Software Installation Instructions

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1.0 Introduction

1.1 Purpose

The purpose of this document is to describe the steps necessary to install the ABI software on a fielded system.

1.2 What You'll Need

1.2.1   Hardware

To install the ABI software, you will need an Ultra 2 system with 2 x 9GB hard drives, a CD-ROM disk and a 4mm tape drive (with minimum of medium density read capability).

1.2.2   Software

- Solaris Installation CD
- CIS 1.2 Install tape
- CIS 1.2 U.S. Patch tape
- ABI 1.1 Install tape

1.2.3   Personnel

To install the ABI software, the installer must have a working knowledge of UNIX and experience entering shell commands and manipulating windows.

2.0 Software Installation

2.1 Operating System Installation

All system hardware should initially be turned OFF. For this step, the Solaris CD-ROM is required.

NOTE: *You must follow all of these instructions <u>each</u> time CIS 1.2 software needs to be installed even if you are only installing a newer version of CIS. If only an ABI Installation tape is to be installed, skip to section 2.5*.

NOTE: *If the workstation has 2 internal hard disk drives, disconnect power and data cables from the second drive. Ensure hard disk drive Small Computer System Interrace (SCSI) addresses are 0 (boot) and 1 (data). Ensure 4mm disk drive SCSI address is 4. Ensure Solaris 2.5.1 CD is labeled "May 1996".*

1. Ensure only one hard disk drive is plugged in (slot 0 = boot disk). The second drive will be used as a data drive and will be configured later in Section 2.4. Turn on all hardware and spin up *only* the designated boot disk.

2. Insert the Solaris CDROM into the CD disk drive. At the **ok** prompt, type:
   boot cdrom
   The system takes several minutes to bring up OpenWindows and display a prompt screen and the "Solaris Install Console" window.

3. When OpenWindows comes up, the "Solaris Installation Program" window appears with **Continue/Help** buttons: **DO NOT CHOOSE EITHER OPTION**.

4. Instead, start a shell by clicking the right track ball button on the background to bring up the "Install Workspace" menu. Right track ball click the **Utilities** menu and select **Command Tool.**

5. Wait for the "cmdtool - /sbin/sh" window to appear. At the # prompt, type: **format**
   The system will present specific disk information, for example:
    AVAILABLE DISK SELECTIONS:

    /sbus@, f8000000/esp@0,8000000/sd@0,0

   NOTE: *If the disk you are using is one that has never been labeled, the workstation will tell you that it is not labeled and will ask you to do so. Type:* **no** *and continue to follow instructions.* <u>*Do not label the disk until these instructions tell you to do so*</u>.

6. Disk '0' will be your boot disk. Specify the disk by typing: **0**. The "FORMAT MENU" will then appear.

7. At the **format>** prompt type: **type**. This will bring up a listing of available drive types.

8. Select **Auto Configure** from the list by specifying it's disk type. Type: **0** at the **Specify disk type (enter its number) [15]**: prompt. You will then see an output that closely matches the following template:
       c0t0d0: configured with capacity of *x.xx*GB
       < Specific disk information displayed here >
       selecting c0t0d0
       [disk formatted]

   NOTE*: If disk is not formatted, type **format**. After formatting is complete, repeat step #6.*

9.   At the **format>** prompt, type: **defect**
   At the **defect>** prompt, type: **both**
   When the **defect>** prompt returns, type: **quit**.

10.   You are now ready to label the disk.
   At the **format**> prompt, type: **label**
         When asked, "Ready to label disk, continue?" type: **y**
         At the **forma***t*> prompt, type: **quit**
         You will now be back at the **'#'** prompt.

11. Within the border of "The Solaris Installation Program" window, click the left track ball
   button to bring the window to the foreground, and then select **Continue**.

12. If an "Identify This System" dialog box is displayed, select **Continue**.

13. You will now be asked for the workstation host name. Left track ball click inside the text
   box and type a user defined host name, then select **Continue**.

   NOTE: *Do not use minus signs in the host name, even though it says it's OK. Host name
   must be at least 3 characters and lower case.*

14. The next window will ask you to determine if the workstation is networked or not. It is
   defaulted to **Yes**. Select **Continue**.

   NOTE: *Always use the default even if your workstation is not network connected. This is where
   the workstation is told to load the networking software. If not connected, you will see an error
   (e.g., **le0 not found**) during bootup in the console window. This can be corrected by putting a
   terminator on the ethernet port on the back of the workstation.*

15. The workstation IP address will be requested next. Type in the IP address and select
   Continue.

NOTE: *Each site will have a unique network assigned IP address.*

16. The "Confirm Information" window will appear next with the Host name, Network default,
   and IP address listed. If all information is correct, select **Continue**.

17. The workstation will take a few seconds to start network services. It will then ask you to
   select a name service. Select **None**, then **Continue**.

18. A "Confirm Information" window will appear with Name service listed as **None**. If correct, select **Continue**.

19. You will next be asked if the system is part of a Subnet with the default equal to **No**. Select **Continue**.

20. The window will then ask you to specify a Time Zone. Select applicable time zone, then select **Set**.

    NOTE: The offset from GMT is measured by your workstation to GMT, not the other way around. This means, for example, that an operator at Davis-Monthan AFB would set his/her offset to GMT+6 (because GMT is six hours ahead of local time) rather than GMT-6 and input local time.

21. The next couple of windows will vary, depending on the selection of time zone setting. Select the settings you desire and then select **Continue**.

    NOTE: *The windows will disappear for a minute or two and the workstation will seem like it's doing nothing. Wait for the information in the next window to appear.*

22. If information is correct, select **Continue** until you get the confirmation window with the Subnet default, Time Zone, Date, and Time listed. If the information is correct, select **Continue**.

23. At the "Install Solaris Software Initial" window - select **Continue**

    NOTE: *If you are loading on a system that already has Solaris installed, the workstation might ask if you want to upgrade. If so, select Initial. If this window does not appear, proceed to the next step.*

24. The workstation will then ask for system type, with **Stand-alone** listed as default. This has to do with the system network software and not the CIS 1.2 software setup. Select **Continue**.

25. You will then be asked to select specific software installation option. Select **Entire Distribution plus OEM support** and then select **Continue**.

26. The "Disks" menu is displayed next with two boxes within the window. One is labeled "Available Disks:". The other box is labeled "Selected Disks:". In between the two boxes are subdued "Add" and "Remove" buttons. Using the left track ball button, highlight the boot disk listed in the "Available Disks:" box. This will cause the add button to highlight. Select the **Add** button.

27. The designated boot disk will now appear in the "Selected Disks:" box. Select **Continue**.

28. The next window will now ask if you want to "Preserve Data?". Select **Continue**.

29. The next window will ask if you want to use "Auto Layout of File Systems". Select **Manual Layout**.

30. A summary showing your current file system and disk layout will now be displayed. Select **Customize**.

31. A list of the partitions on the disk will appear. To modify the settings, click the left track ball button within the applicable box, then enter the following parameters:

Partition	1st box	2nd box
0:	**/**	**200**
1:	**swap**	**200**
6:	**/usr**	**6000**

(NOTE*: only for 9GB server configurations***)**
   All other partitions should be blank in first and second boxes.

32. Check for available disk space: click in any of the unused partitions and the available space will be updated and shown at the bottom of the partition window. There must be at least 40MB of FREE disk space to allow for the audit files: */var/audit*.

33. When the partition table is correct, select **OK**.

34. A warning dialog will appear that says, "Unused disk space <drive name>". Select **Continue**.

35. This will take you back to the "File System and Disk Layout" window. If the information is correct, select **Continue**.

   NOTE: *Sometimes these numbers are rounded up by 1 or 2 numbers*.

36. The next window will ask if you want to "Mount Remote File Systems?" Select **Continue**.

37. This brings up the Profile and asks you to verify. If everything is correct, select **Begin Installation**.

38. A warning dialog again appears about the "Unused disk space". Select **Continue**.

39. A dialog box will then ask if you want to reboot after installing Solaris. Select **Reboot**.

40. A progress meter is now brought up and the Solaris OS installation begins. After about 30-45 minutes, the system reboots. The Solaris OS installation is now complete.

   NOTE: *If the system does not boot, the boot device must specify the boot disk. At the **ok** prompt, type **print env** and scroll down to determine boot device setting. If incorrect, at the **ok** prompt, type **set boot-device disk0**.*

41. After the system reboots, you will then be asked to set the root password. Enter your choice of a root password and verify.

   NOTE: *If your root password is not at least 8 characters long, the operating system will automatically add 'x's to reach that number of characters.*

2.2 CIS 1.2 Software Installation

   NOTE: *For this step, the CIS 1.2 Install and U.S. Patch tapes are required.*

   NOTE: *You must follow the instructions of Section 2.1 each time before installing the CIS software even if you are only installing a newer version of CIS.*

1. Log in as **root**. Enter root password. Type: **eject**, then remove and store the Solaris CD.

2. Insert the 4mm CIS 1.2 Install tape and type:
    tar xpf /dev/rst12

    CAUTION: The rst12 and nrst12 links must point to the correct 4mm device. The install procedure/scripts expects only these devices. If the following error message appears:
    tar: /dev/rst12: I/O error; enter the following commands at the prompt:
    rm /dev/rst12
    ln -s rmt/0lb /dev/rst12
    rm /dev/nrst12
    ln -s rmt/0lbn /dev/nrst12
    tar xpf/dev/rst12

3. When the prompt returns, type:
    ./configure

4. At the **Enter New CIS 1.2 System Authorization String:** prompt, type **777**.

5. "Extracting system definition from tape …" is then displayed. The extraction will take about 15-20 minutes. Patches from the tape are being loaded. It will then ask if you wish to continue this installation. Enter **yes**.

NOTE: *By default, the installation will continue automatically in 60 seconds*.

6. "Generating list of files to patched" is then displayed. The required patches will load. When finished, it will reboot and return the **login** prompt. Log in as **root**. Then enter the root password.

7. At the system # prompt type:
    tar xpf /dev/rst12

8. When the # prompt returns type:
    ./configure

9. At the **Enter New CIS 1.2 System Authorization String:** prompt, type **777**.

10. When the DoD disclaimer is displayed, read it and if you accept, hit **Return**.

11. At the **Enter default router gateway:** prompt, enter the router IP address. If you don't have a default router or are unsure of your default router, then hit **Return**.

12. At the next prompt, you would *not* like to obtain an "Initial Host Table" from a remote workstation, so hit **Return.**

13. Next, choose the AA Stand-alone system to load by typing: **3**.

14. Enter the root password.

15. If the "Checking for possible account servers" message appears, select the workstation you are currently installing by picking the host name from the list. This can be changed later via server selection. If there are no other possible account servers on the network, proceed to Step 16.

16. At the **Proceed [y]?** prompt, hit **Return**.

17. The workstation will then begin to load the CIS software. This will take about 45 minutes to complete. You may leave the workstation unattended at this time.

18. After the CIS Install tape is complete, you will need to install the U.S. Patch tape. At the **Type input here = =>** prompt, type **done**.

    The workstation will then bind the software. This takes a few minutes. Once the software is loaded and bound, the workstation will reboot. Make sure the system reports, "All TIP packages up". If any TIP package fails or is reported as "still coming up," reboot the system. If all TIP packages are not up after rebooting **3 times**, rebuild the entire system starting with Step 1 of the Operating System installation procedures in Section 2.1.

19. At the **login** prompt type: **admin**.

20. When prompted for a password, type the default admin password: **cis12adm**.

21. When the DoD disclaimer is displayed, read it and if you accept, hit **Return**.

22. The workstation will then ask you to change the password. Enter and verify your new password.

    NOTE: *Passwords must be at least 8 characters and be a combination of alpha and numeric characters.*

23. Insert the 4mm CIS 1.2 U.S. Upgrade tape into the tape drive.

24. After the "Application Manager" window appears, select the **System_Functions** folder, then the **Security_Administration** folder and invoke the **Superuser Shell** icon.

25. Enter the root password. A shell window will then appear. Create a temporary directory (it will be removed automatically after the install is complete) where the patch tape will be loaded. In the shell window type:
    cd /usr
    mkdir tmppatch
    cd tmppatch

26. Load the tape by typing:
    tar xpf /dev/rst12

27. When the system prompt returns, invoke the install patch script by typing:
    /usr/tmppatch/install_patch

28. A series of popup windows will appear next; the first asks if the patch should be applied. Select **Apply_Patch**.

29. A notification window concerning *grrr errors* is next. Select **I can ignore grrr errors**.

30. The status of any *unmounting errors* appears next. If no errors are listed, select **Continue**.

31. The next window explains that "This is an update for U.S. only." Select **I understand**.

32. The last window indicates that the patch is complete. The Superuser shell <u>may</u> show 2 *mv: access* errors - ignore them. On the popup window, select **OK**. The system will now reboot.

33. Eject the tape. CIS 1.2 software installation is complete.

2.3 Building the Databases

1. Login as **root**. Type the root password.

2. At the # prompt, type:
    dmesg | egrep "^mem"   Divide the total memory in half.
    tail -18 /etc/system   Look at the line: *set shmsys: shminfo_shmmax =xxxxxx000*

    NOTE: If necessary, edit (vi) the */etc/system* file so the max shared memory is half the total memory. For example, if total memory = 524288K (0x20000000), then the shared memory line should read: *set shmsys: shminfo_shmmax =262144000.*

    If the /etc/system file required editing, you <u>must</u> reboot the system. Type: **reboot**. Login as **admin** and skip step 3. When the DoD disclaimer is displayed, read it and if you accept, hit **Return**.

3. At the # prompt, type: **exit** and then login as **admin** with the new admin password.

4. In the "Application Manager" window, select the **System_Functions** then **Security Administration** folders, and invoke the **Security Parameters** icon. Modify/Set the following parameters as shown:

    administrative =no
    application   =no
    auditing   =no
    exec   =no
    file_attr_acc   =no
    file_atr_mod   =no
    file_close   =no
    file_creation   =no
    file_deletion   =no
    file_read   =no
    file_write   =no
    ioct1   =no
    ipc   =no
    login_logout   =no
    network   =no
    non_attrib   =no
    other   =no
    process   =no

    Verify the settings as shown above, then select **Accept**.

    Change 1

5. In the "Application Manager" window, select the **System_Functions** then **Data_Management_Menu** folders, and invoke the **Change Database Sizes** icon. Modify the database sizes by holding the left track ball button down on each slide bar and moving it right or left so that each successive database size matches the following numbers: 25, 55, 252, 260, 579, 179, 129, and 384 (or as close to these numbers as possible). Once database sizes are set, select **ok**. If you get a pop-up window asking to confirm rebuilding databases, select **yes**.

    NOTE: *You may need to decrease the size a subsequent database once maxxed "out with 0 unused space". Move between the database sizes until all are adjusted accordingly.*

6. Within the "Data_Management_Menu**"** window, execute the **Server Selection** icon and enter the Host server name in the "DM Server" box, then select **Accept**.

7. Within the "Data_Management_Menu**"** window, execute the **Build Databases** icon. Click **ok** at the prompt.

8. Open a UNIX shell and type:
    cd /opt/etc/sybserv
    tail -f init.log

    NOTE: *Building the database structures will take approximately 2-3 hours. The previous tail command will display the database build progress and will indicate when it has been successfully built.*

2.4. Configuring the Data Disk

1. In the "Application Manager" window, select the **System Functions** folder, then select the **Shutdown** icon and confirm by selecting the **Shutdown** button. At the **ok** prompt, turn the CPU and hard disk drive power switches *off*, then plug in the data disk.

2. Power on the disk drives and the CPU system. Stop the bootup process by pressing the **<Stop><A>** keys. At the **ok** prompt, type: **boot -r**. The system will now boot up both disk drives.

3. Login as **root**. Enter root password.

4. Type **format** and confirm that both the boot (0) and data (1) disks are present. Make a note of the data disk address, e.g., **c0t1d0**. Select the data disk **1**. Ensure no warning messages appear.

5. Create the disk partitions by typing **partition**. At the **partition>** prompt, type **0**. For each specific partition's prompted field, enter the values specified in the table below:

Partition	ID tag	Permissions	Start Cylinder	Size
0	unassigned	wm	0	0
1	unassigned	wm	0	0
2	unassigned	wm	0	5266c
3	unassigned	wm	0	0
4	unassigned	wm	0	0
5	unassigned	wm	0	0
6	unassigned	wm	0	0
7	home	wm	0	5266c

6. Type **print** to display the partition table and confirm the partition layout.

7. Label the disk when the partitions have been created. Type:
      label
      yes

8. Exit the format command. Type: **quit**, then **quit** again to return to the shell prompt.

9. Construct a new file system for Partition 7. At the shell prompt, type:
      newfs /dev/rdsk/*c0t1d0s7*

   NOTE: *c0t1d0s7* is used here as an example. This value is retrieved from the format command in step 4 where *c0t1d0s7* is the partition (i.e., segment) just created on the data disk.

10. Respond **y**↵ to the question to construct a new file system. This takes about 15 minutes.

11.   When the prompt returns, create the */abi/disk2* mount point at the root by typing:

> **cd /**
> **mkdir /abi**
> **chmod 777 /abi**
> **mkdir /abi/disk2**
> **chmod 777 /abi/disk2**
> **mount /dev/dsk/*c0t1d0s7* /abi/disk2** (*NOTE:* use same disk address as in step 9)
> **df -k**   (*NOTE:* command confirms the mount was successful)

12. Edit the */etc/vfstab* file to include the swap partition and the newly mounted partition. Add the following line in the */etc/vfstab* file replacing ***c0t1d0s7*** with your data disk address.
   /dev/dsk/*c0t1d0s7* /dev/rdsk/*c0t1d0s7* /abi/disk2   ufs   2 yes   -

13. Reboot the system.

2.5. Install ABI Tape

1. Login as **root**. Type the root password.

2. Kill the sys_exec process to stop all ABI processes. Type:
    ps -eaf | grep sys_exec
    kill -15 *xxxx*   (*NOTE: xxxx* is the PID of the sys_exec process)

3. Confirm all but 2 of the cgi Solaris processes have terminated. Type:
    ps -eaf | grep solaris

    NOTE: *If more than 2 cgi solaris processes are listed, wait 30 seconds then retype command.*

4. Insert the ABI Install tape and change to the root directory, then load the tape. Type:
    cd /
    tar xvf /dev/rst*4*

5. After the ABI Install tape is loaded, make the CIS desktop changes by invoking the install script. Type:
    /opt/abi_tmp/cis_abi_install
    At the **ABI Server name** prompt, enter the applicable ABI server name.

6. Eject the tape.

    NOTE: *Perform Steps 7 & 8 <u>only</u> if ABI is NOT installed on this system. If you are installing an ABI update version, then skip Steps 7 & 8.*

7. Extract the OpenGL packages. At the # prompt, type:
    cp /abi/disk2/OpenGLpkgs.tar /tmp
    cd /tmp
    tar xvf OpenGLpkgs.tar

8. The extraction of OpenGL creates an *OpenGLpkgs* directory. To install OpenGL, execute the RUN_ME file, responding *yes* (y) to any questions. Type:
    ./OpenGLpkgs/RUN_ME.OGL11

9.   Remove the *OpenGLpkgs.tar* file. At the # prompt type: **rm /abi/disk2/OpenGLpkgs.tar**

10. Reboot the system by typing **reboot.** ABI installation is now complete.

2.6   ABI Icons Setup

The following steps are required in order to provide a *start_abi* icon at the desktop level.

1.   Login as the ABI user.

2.   From the "Application Manager" window, select the **INTEL_Applications** folder, then
         select the **AA** folder.

3.   From the "**AA"** window, single click the **start_abi** icon to highlight it. Hold the middle
         track ball button down, then drag the icon onto the desktop to where the position of the icon
         on desktop is suitable, then release the track ball button. ABI Icon Setup is now complete.

2.7   Initialize Displays

If chart imagery has been loaded, the following steps are required in order to initialize the chart
display configuration files.

1.   Double click the **start_abi** icon.

2.   Select **OK** in the Date and Time window.

3.   Select **Quit** in the "MATT Radio" setup window.

4.   When the "WDB World Map" is fully displayed, select the **Tri-window** speed button on
         the top executive banner. Wait until all 3 displays are fully loaded before proceeding
         (approximately 1-2 minutes).

5.   Select the **Utilities** pulldown menu from the top executive banner. Select the **Expert
         Functions** option, then select **Quit**.

6.   The ABI system chart displays are now initialized and ABI can be restarted for operation.

2.8   Load Chart and DTED Data

2.8.1   To Load Charts

1. Select <u>Expert Functions</u>, a utility pull down window opens

2. Select <u>Imagery/Chart</u>, an Imagery/Chart submenu opens.

3. To load chart data, select <u>Import Chart.</u>

4. Insert chart CD in CD ROM drive.

5. Enter chart name for loading in "Chart Name" field. Ensure file name is in accordance with user defined naming procedures.

6. Select **OK.**

7. Chart data will load.

2.8.2   To Load DTED

1. Select <u>Import DTED</u> under Expert Functions pull down menu.

2. Import DTED menu is presented.

3. Set Lower Left Lat (HDD), Lower Right Lon (HDDD), Upper Right Lat (HDD), Upper Right Lon (HDDD) fields on the set-up window. The numbers for Lat/Lon are found on the front of the CD ROM.

4. Select **OK.**

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Appendix C - Allowable Databases

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Allowable Datebases

The following databases exist on CIS systems although not all exist on all systems from which to load and extract ABI data. . (See descriptions below) It is recommended that the theater or local database be extracted and the local database loaded.

- **reference**

  DIA "reference" information. This is a read-only database on all CIS systems. This database may be used as a source for extracting ABI data, however, as read-only reference information, it may not reflect any recent theater or local updates. <u>This database is not used by ABI, nor is it updated by the AA correlator, so it should not be used as a load destination on the ABI system.</u>

- **theater**

  This database is editable on a CIS Component-Level DM/MA Server and read-only on CIS Unit-Level Servers (DM/MA or AA Stand-alone, the latter being the ABI machine type). This database may be used as a source for extracting ABI data, however, as a read-only source at the Unit Level, it may not reflect any recent local updates. <u>This database is not used by ABI, nor is it updated by the AA correlator, so it should not be used as a load destination on the ABI System.</u>

- **local**

  This database does not exist on a CIS Component-Level DM/MA Server. This is the editable database used by ABI and updated by the AA correlator on Unit-Level Servers. This database may be used as source for extracting ABI data. <u>It should be used as the load destination on the ABI System.</u>

- **exercise**

  This database exists, and is editable, on both Component and Unit-Level systems. This database is used for the storage and manipulation of exercise, practice, or other test data. This data may, in principle (depending on specific needs), be used as an extract source for the ABI System for exercise, practice, or other test purposes. <u>This database is not used by ABI, nor is it updated by the AA correlator, so it should not be used as a load destination on the ABI System.</u>

- **coalition**

This database exists, and is editable, on both Component and Unit-Level systems. This database is used for the storage and manipulation of data related to Coalition forces. This data may, in principle (depending on specific needs), be used as an extract source for the ABI System for purposes related to Coalition forces. <u>This database is not used by ABI, nor is it updated by the AA correlator, so it should not be used as a load destination on the ABI System.</u>

Table C-1 Allowable Database and System Extract Sources

Extract	Reference	Theater	Local	Exercise	Coalition
Extract Source Machine	Local or Component-Level DM/MA Server	Unit-Level DM/MA Server, Component-Level DM/MA Server, or Stand Alone Server (Ground ABI System)	Unit-Level DM/MA Server, or Stand Alone Server (Ground ABI System)	Unit-Level DM/MA Server or Component-Level DM/MA Server, or Stand Alone Server (Ground ABI System)	Unit-Level DM/MA Server , Component Level DM/MA Server, or Stand Alone Server (Ground ABI System)
Notes	DIA "reference" information. No theater or local updates.	May contain more recent theater-level updates.	May contain more recent theater and local-level updates.	Exercise, practice, or test use only.	Coalition force use only.